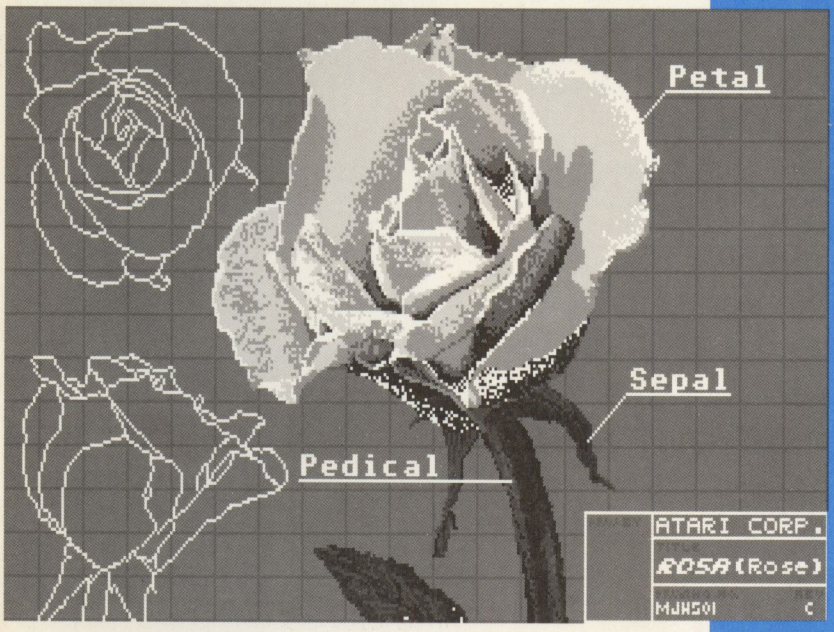
ATARI®
NEOchrome™

Painting Program
for all ST™ Computers



User's Manual

IMPORTANT INFORMATION

NEOchrome was designed and programmed by Dave Staugas; special effects by Jim Eisenstein; graphics by Jerome Domurat. Demonstration .NEO files used by permission of Atari Games and Alan Murphy.

Every effort has been made to ensure the product documentation in this manual. However, because it is constantly improving and updating its software and hardware, Atari Corporation cannot guarantee the accuracy of printed material after the date of publication and disclaims liability for changes, errors, or omissions.

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NEOchrome™

Painting Program
for all ST™ Computers

User's Manual

ATARI
NEOchrome
Painting Program
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INTRODUCTION

Welcome to NEOchrome!

NEOchrome is the powerful and sophisticated painting program for the ATARI ST Computer. With it, you can create countless shapes, pictures, and graphic designs, each using up to 16 colors from the ST Computer's 512-color palette.

NEOchrome is a step up from drawing programs. Its bountiful offering of colors, shapes, and Artist's Tools lets you actually "paint" pictures on screen. You can brush boldly on the full-size Canvas or work in minute detail, pixel by pixel, using NEOchrome's Magnifier. In addition, NEOchrome is versatile enough to help you design graphs, charts, or illustrations to be used in other programs.

The NEOchrome program disk contains the NEOchrome program, a slideshow program for viewing your NEOchrome paintings, and a library of NEOchrome picture files that you can use as models or as pictures to practice on.

"NEO" means new; "chrome" means color. NEOchrome is the new, easy way to create high-quality, colorful artwork on your ST Computer.

Using the Manual

The NEOchrome User's Manual contains complete instructions for using NEOchrome. You will learn how to draw lines, boxes, and circles, fill shapes with color, and mix text and graphics. You will also discover how to choose and change colors, save and load pictures to and from disk, and create motion in your pictures for special effects.

NEOchrome is best learned by reading the chapters of this manual in order, studying the illustrations, practicing, and experimenting. The following information tells you what's in each manual section.

Chapter 1: Getting Started provides basic information so you can start exploring the program immediately. This chapter explains how to load NEOchrome and exit from it, save and load your paintings, and run them in a slideshow. It also identifies the components of the NEOchrome screen and briefly defines their functions.

Chapter 2: NEOchrome Components thoroughly explains how to use all features of NEOchrome, in the order they are displayed on the NEOchrome screen. Numerous illustrations help you learn how each component operates.

Chapter 3: NEOchrome Techniques explains advanced graphics techniques, step by step. The end of the chapter gives information for achieving special effects, and complete details on running and customizing NEOshow, the NEOchrome slideshow program.

Appendix A: System and Extended System Character Sets describes the characters and symbols available from the ST Computer keyboard for use in NEOchrome. Tables list the commands for keying in special characters.

Appendix B: .NEO File Format provides NEOchrome information for programmers.

Glossary and **Index** help you define or locate terms used in this manual.

Customer Support tells you where to find more information about NEOchrome, your ATARI ST Computer, and ATARI ST Computer products.

CHAPTER 1
GETTING STARTED

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System Requirements

- ATARI ST Computer
- ATARI MicroFloppy Disk Drive
- ATARI Color Monitor (or color television if your ST Computer has an RF modulator)

Set up your ATARI ST Computer system. Follow the setup instructions in the Owner's Manual supplied with your computer.

Note: Your ST Computer should have TOS™ in ROM. If you have an early model computer that uses disk-loaded TOS, NEOchrome's Jack Knife and Copy Box Tools will work only on the half-size Canvas, without function-key capabilities. For information on acquiring TOS ROMs, contact your ATARI retailer.

Making a Backup Disk

Making a backup copy of your original NEOchrome program disk protects you from accidentally losing any of its information. To make a backup disk, follow these steps:

1. Write-protect your original NEOchrome disk. To do that, slide the write-protect tab on the disk to the write-protect position (you'll be able to see through the notch).
2. Have a blank, formatted disk ready. This will be your backup disk.
3. With the GEM™ Desktop displayed, insert the NEOchrome disk into Drive A. If you have two disk drives, insert the blank disk into Drive B.
4. Drag the Drive A icon onto the Drive B icon and release the mouse button.
5. Follow the prompts on screen. If you have one disk drive, the system prompts you to switch the original disk and the backup disk from time to time. If you have two disk drives, make sure the disks are in their correct drives before clicking on OK.

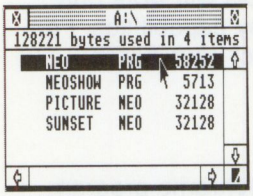
After copying, store the original program disk in a safe place and use the backup disk when working with NEOchrome.

Note: For complete information on making a backup disk, see your ST Computer Owner's Manual.

Loading NEOchrome

NEOchrome is a low-resolution program that uses the ST Computer's 16-color, 320 x 200 pixel mode. You can load NEOchrome from either a low- or medium-resolution GEM Desktop. To do that, follow these steps:

1. With your ST Computer turned on and the GEM Desktop displayed, insert the NEOchrome program disk into the disk drive.
2. Double-click on the correct floppy disk icon to display a Directory Window for the disk.

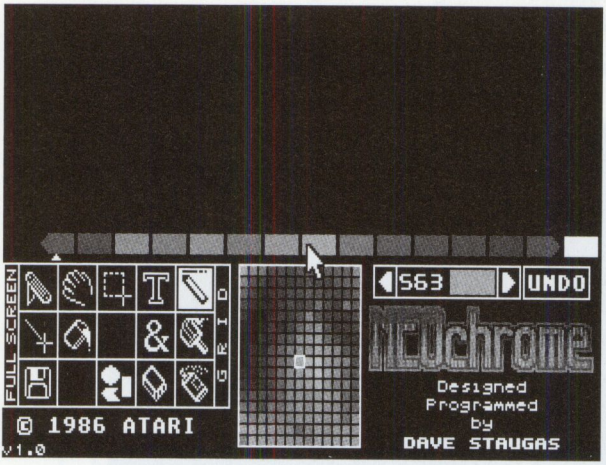


Directory Window

The Directory Window lists the following files: NEO.PRG, NEOSHOW.PRG, and various .NEO files. NEO.PRG is the NEOchrome program; NEOSHOW.PRG is a slideshow program; and files with the .NEO extender are picture files. Your Directory Window may list different .NEO files than those shown here and may give different file sizes for NEO.PRG and NEOSHOW.PRG.

Note: For screen illustrations in this manual, NEOchrome was loaded from a medium-resolution desktop. If you load NEOchrome from a low-resolution desktop, your screen displays may differ slightly.

3. Double-click on NEO.PRG. The NEOchrome program screen will appear.

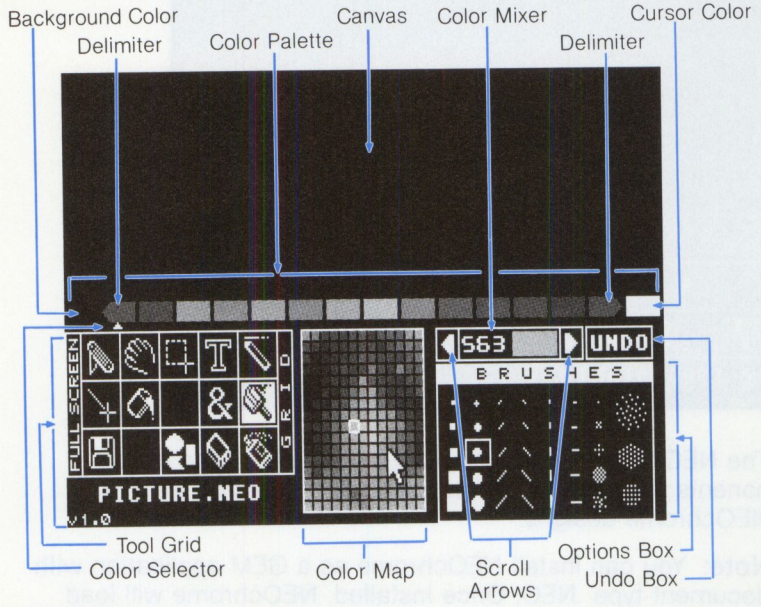


The NEOchrome program screen contains all the components you need to create, save, and redisplay your NEOchrome designs.

Note: You can install NEOchrome as a GEM application with document type .NEO. Once installed, NEOchrome will load and display a selected picture in one operation. For instructions on installing a program as a GEM application, see your ST Computer Owner's Manual.

NEOchrome Components

The components on the NEOchrome screen are your tools for creating pictures, mixing and using colors, and saving and loading your designs.



Canvas

The Canvas is where you draw, paint, manipulate picture sections, and write text. The Canvas can be viewed in either half size or full size. When NEOchrome first loads, its default Canvas view is half size.

Color Palette

The Color Palette shows the 16 colors available for painting, and is used to change the color you're working with.

NEOchrome's default Palette shows black as the background color (far left position), white as the cursor color (far right position), and 14 hues representing the full color spectrum. Red and magenta are the Delimiters (their ends are pointed), and red is also the currently selected color (a small marker, the Color Selector, appears under it).

Tool Grid and Options Box

The Tool Grid holds the Artist's Tools. It also contains the Full Screen and Grid features, shows the filename of the picture on the Canvas, and identifies the cursor's position on the Canvas with x/y coordinates. When NEOchrome first loads, the default filename is PICTURE.NEO, and the x/y coordinates are turned on.

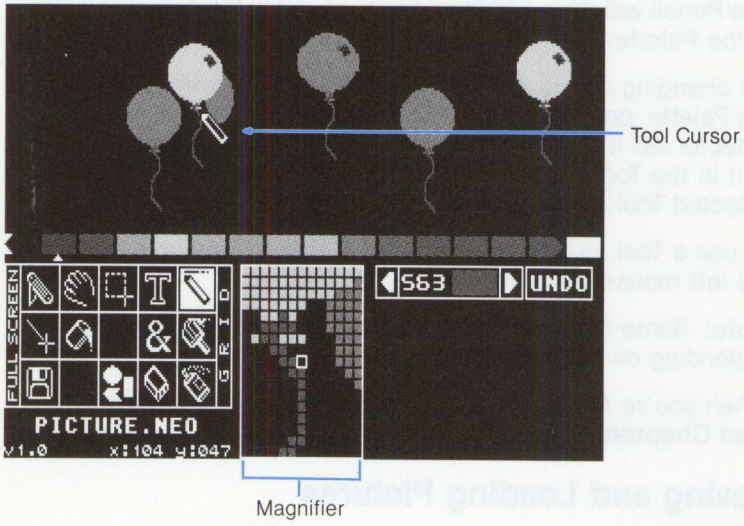
The Tool currently selected appears in reverse video (black changes to white and vice versa). When you load NEOchrome, the Pencil is selected by default.

The Options Box identifies the selected Tool and its available options.

Color Map/Magnifier

When the mouse pointer is on or below the Color Palette, NEOchrome displays a Color Map. This map is your guide to the 512 colors available from the ST Computer.

When the mouse pointer is moved above the Palette it becomes a Tool cursor, and the Color Map becomes a Magnifier. The Magnifier shows an enlarged view of the Canvas area where the cursor is positioned.



Color Mixer

The Color Mixer shows a selected color and its RGB (red, green, blue) value. By changing the RGB value, you can mix any one of the ST Computer's 512 colors and look at it on a swatch before adding it to your Palette.

Scroll Arrows

The Scroll Arrows are used to scroll the Palette colors one step at a time. They also let you create and control color cycling.

Undo Box

The Undo Box lets you restore the Canvas to the way it appeared before your last graphics operation.

Painting a Picture

You're now ready to start painting with NEOchrome. Move the mouse pointer above the Color Palette onto the Canvas. Notice that the pointer becomes a Pencil cursor because the Pencil is selected in the Tool Grid.

Hold down the left mouse button and move the Pencil around. The Pencil will draw red lines because red is the selected color in the Palette.

Try changing colors and Tools. To select a different color from the Palette, point to it and click the left mouse button. The Color Selector will move under that color. To select another Tool, point to it in the Tool Grid and click the left mouse button. The selected Tool will appear in reverse video.

To use a Tool, put its cursor on the Canvas, then hold down the left mouse button and move the mouse.

Note: Some Tools use either the left or right mouse button depending on the procedure.

When you're ready to learn more about using NEOchrome, read **Chapters 2** and **3**.

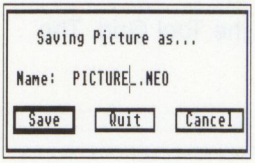
Saving and Loading Pictures

At any time, you can save your current picture to disk, or load another picture onto the NEOchrome screen. Both these processes use the Disk Tool.

Saving Pictures

To save the picture currently on the NEOchrome screen, follow these steps:

1. Click the left mouse button on Disk in the Tool Grid. A Dialog Box appears:



Note: Dialog Boxes are displayed in the resolution you loaded NEOchrome from. Dialog Boxes displayed in low resolution temporarily change the Color Map and the far right color in the Palette, but do not permanently affect your NEOchrome picture.

2. If you wish, type a different picture name on the Name line. Use the **[Backspace]** or **[Esc]** key to erase the current name, then type in a new name using up to eight characters. NEOchrome picture files must have a .NEO extender.

Note: If you don't change the name, your picture will be saved by whatever name currently appears in the Dialog Box. If a picture already exists by that name, NEOchrome will display a Dialog Box asking how you want to proceed. Click on Yes (or press **[Return]**) to continue.

3. Click on Save (or press **[Return]**).

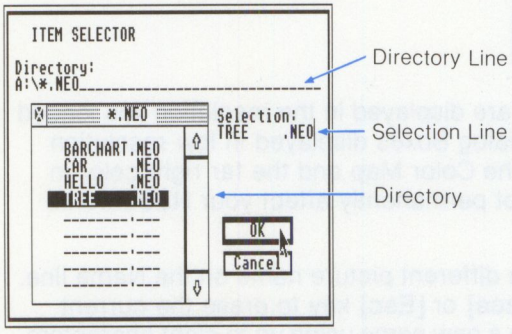
Your picture will be saved to the same disk (and folder, if open) that you loaded NEOchrome from. To save your picture to a different disk, type in the disk identifier followed by a colon before typing in a new name (for example, B:SUNSET.NEO).

Note: Make sure the disk you are saving to is not write-protected.

Loading Pictures

The NEOchrome program disk contains .NEO files. These are picture files, both those that were included on the original program disk, and those you create using NEOchrome. You can load a .NEO picture onto the NEOchrome screen by following these steps:

1. Click the right mouse button on Disk in the Tool Grid. The Item Selector Box appears:



2. Point to the picture's filename in the Directory and click the left mouse button. Then click on OK (or press **[Return]**). You can also double-click on a filename, or type a filename on the Selection line and press **[Return]**.

The selected picture will be loaded onto the Canvas.

To see a directory of NEOchrome pictures held on a different disk, follow step 1. When the Item Selector Box appears, click the left mouse button on the Directory line. Use the **[Backspace]** key to erase the line, then enter the correct disk pathname. (For example, to see the .NEO files from Drive B, type "B:*.NEO".) Move the pointer into the Directory and click the left mouse button. The new Directory will be displayed. Then load a file by following step 2.

Note: If you try to load a picture while another painting is in memory, NEOchrome will display a Dialog Box asking how you want to proceed. Clicking on Yes (or pressing **[Return]**) at this point displays the Dialog Box for saving pictures. To continue, follow the steps in **Saving Pictures** in this chapter.

Printing Pictures

If you have installed a printer from the GEM Desktop, you can print your NEOchrome pictures. For complete instructions on installing a printer, see your ST Computer Owner's Manual.

To print a NEOchrome picture, follow these steps:

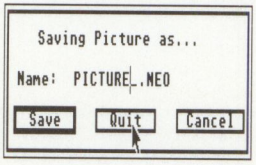
1. Turn your printer on and adjust the printer paper.
2. Load a picture onto the NEOchrome Canvas.
3. Move the mouse pointer to the Tool Grid and click on Full Screen. Your Canvas will appear in full size.

Warning: Do not print a NEOchrome picture in half size.

4. Move the mouse pointer into a corner of the Canvas so it does not appear on the printout.
5. Hold down the **[Alternate]** key on your keyboard, then press **[Help]**. Your printer will print your NEOchrome picture.

Exiting NEOchrome

To exit NEOchrome and return to the GEM Desktop, click the left mouse button on Disk in the Tool Grid. When the Dialog Box appears, click the left mouse button on Quit.



The NEOchrome program closes and the screen redisplays the GEM Desktop.

Note: After you click on Quit, NEOchrome may display a Dialog Box asking if you want to save your picture. If you do, click on Yes (or press **[Return]**), then follow the instructions under **Saving Pictures** in this chapter.

Running NEOshow

NEOshow is NEOchrome's slideshow program. It lets you display your paintings one by one as a slideshow. To use NEOshow, return to the GEM Desktop, display a directory listing for your NEOchrome program disk, and double-click on the file NEOSHOW.PRG. The program will load and display all .NEO (picture) files it finds on disk, one at a time.

Press **[Control] [S]** to pause the slideshow while it is running; press **[Control] [Q]** to resume it. Press **[Space Bar]** to exit the program and return to the GEM Desktop.

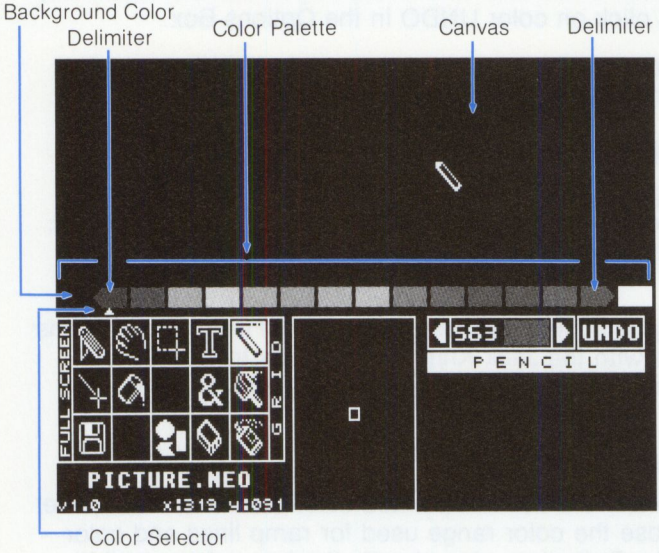
You can customize a NEOshow slideshow, determining what pictures will be displayed, in what order, and for how long. For complete information on running and customizing NEOshow, see **Running a NEOchrome Slideshow** in **Chapter 3**.

CHAPTER 2
NEOCHROME COMPONENTS

This chapter explains in detail how to use all the components of NEOchrome, in the order they are displayed on the NEOchrome screen.

Canvas

The Canvas is where you create and modify your NEOchrome pictures. You work on the Canvas by moving the ST Computer's mouse and pressing the mouse buttons. Each point on the Canvas is a pixel (picture element), the smallest point of resolution on a display monitor.



The Canvas can be used in half size or full size. (To find out how to use the full-size Canvas, see **Full Screen** in this chapter.) Press the **[Esc]** key to toggle between the half- and full-size Canvas.

Color Palette

The Color Palette shows the 16 colors currently chosen for your picture. To use a color, click on it with the left mouse button. The Color Selector, a small marker below the Palette, moves to point at that color, which will now appear on the Canvas as you draw or paint.

You can change the Palette colors by using the Color Map or Color Mixer. Select the Palette color you want to change by clicking on it with the left mouse button. The Color Selector will move under that color. Then double-click the left mouse button on a color in either the Map or the Mixer. (See **Changing Colors in the Palette** in **Chapter 3** for complete instructions.)

When you change a color in your Palette, the same color change takes place in your picture. To restore the previous color in your Palette and on the Canvas, select the Miscellany Tool, then click on color UNDO in the Options Box.

Three colors on the Palette have special uses; they are the background color and the two Delimiters.

The Background Color

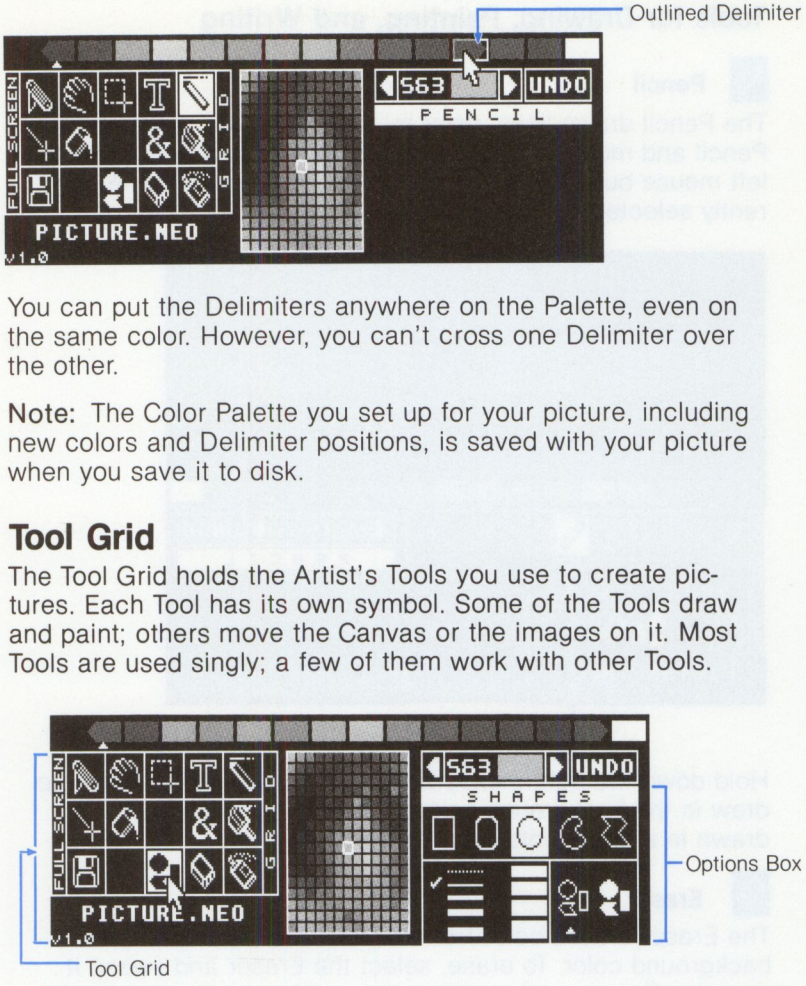
The background color is on the left end of the Palette. It is the color of the Canvas, and other colors are painted over it. It is also the color that surrounds the Canvas, framing your picture.

The background color becomes transparent in picture sections you define with the Jack Knife or Copy Box in Transparent mode. (See **Jack Knife** and **Copy Box** in this chapter for complete information.)

Delimiters

The Delimiters are the two pointed color blocks in the Palette. They enclose the color range used for ramp lines and color cycling. The Delimiters also identify the two colors used in color swapping and color substitution. The color of the Delimiter pointing left is the border color for filled shapes.

To move a Delimiter in the Palette, point to it and hold down the right mouse button. An outline appears around the Delimiter. Drag the Delimiter to another color in the Palette, then release the button. The new color becomes the Delimiter.



You can put the Delimiters anywhere on the Palette, even on the same color. However, you can't cross one Delimiter over the other.

Note: The Color Palette you set up for your picture, including new colors and Delimiter positions, is saved with your picture when you save it to disk.

Tool Grid

The Tool Grid holds the Artist's Tools you use to create pictures. Each Tool has its own symbol. Some of the Tools draw and paint; others move the Canvas or the images on it. Most Tools are used singly; a few of them work with other Tools.

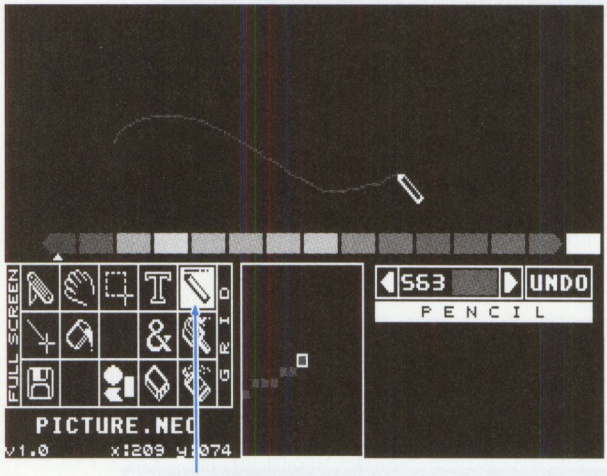
To select a Tool, point to it in the Tool Grid and click the left mouse button. Selected Tools appear in reverse video (black reverses to white and vice versa). For many Tools, an Options Box appears, identifying the Tool and its available options. Options are selected in the same way as Tools: by pointing to them and clicking the left mouse button.

After selecting a Tool (and an option, if needed), move the mouse pointer onto the Canvas. The pointer will change into the symbol for the Tool being used. When you move the Tool down to the Color Palette or below it, the mouse pointer reappears.

Tools for Drawing, Painting, and Writing

Pencil

The Pencil draws lines, point by point. To draw, select the Pencil and move it around the Canvas while holding down the left mouse button. Points and lines will be drawn in the currently selected Palette color.

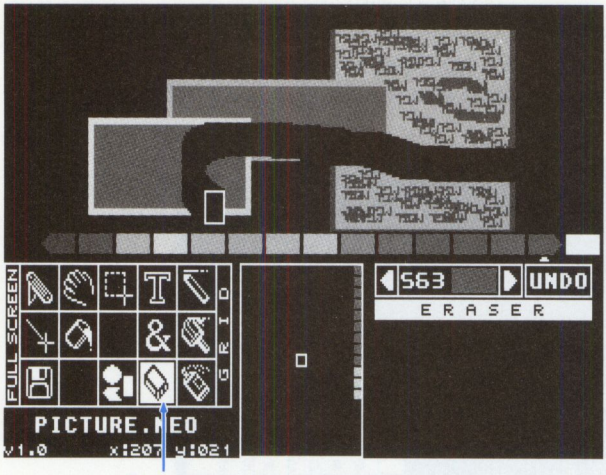


Pencil

Hold down the right mouse button while moving the Pencil to draw in the background color. If you now go over anything drawn in another color, this "erases" it.

Eraser

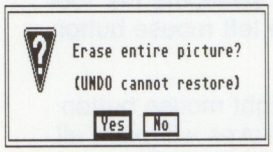
The Eraser erases color from the Canvas, leaving only the background color. To erase, select the Eraser and sweep it over the Canvas while holding down either mouse button. Or, position the Eraser on the Canvas and click either mouse button to erase only what's under the Eraser.



Eraser

To restore the erased portion of a picture, click on the Undo Box (or press the **[Undo]** key).

To erase everything on a half-size Canvas in one step, double-click the left mouse button on the Eraser symbol in the Tool Grid. Double-click the right mouse button on the symbol to erase the full-size Canvas at once. A Dialog Box appears:

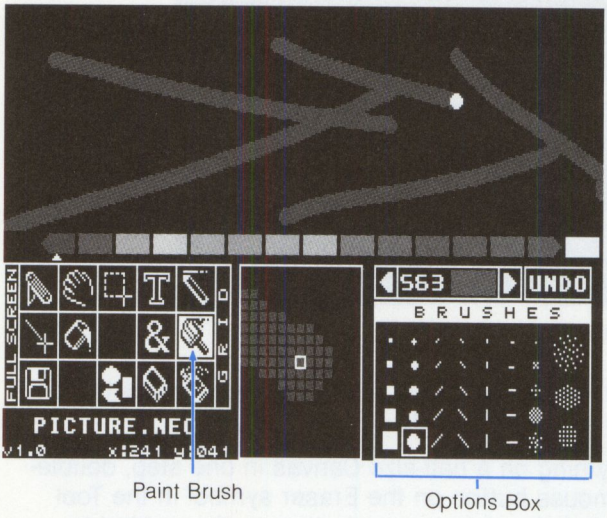


The Dialog Box reminds you that once the full-size Canvas is erased, you cannot retrieve that picture with the Undo Box. Select Yes to erase. To preserve the picture, select No and save the picture, then erase. (To save a picture, see **Saving Pictures** in **Chapter 1**.)

After erasing the half- or full-size Canvas, NEOchrome automatically reselects the Tool you last used before using the Eraser.

Paint Brush

The Paint Brush brushes paint on the Canvas. When you select the Paint Brush, an Options Box appears showing the 38 brushes available.



Select a brush from the Options Box (an outlined box appears around the selected brush). Then paint by sweeping the Tool across the Canvas while holding down the left mouse button. The brush will paint in solid strokes.

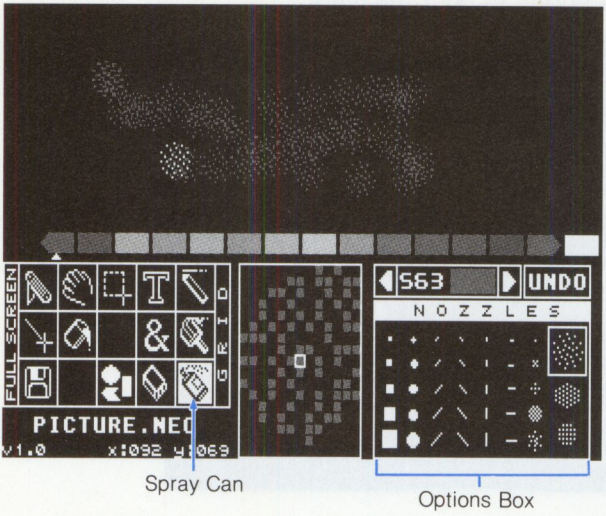
Paint in multicolors by holding down the right mouse button while using the Paint Brush. Your brush strokes will paint all the colors enclosed by the two Delimiters in the Color Palette, flowing in order from left to right and then repeating.

You can stamp a single brush dab on the Canvas by holding the Paint Brush still and clicking either mouse button.

Note: To create your own brushes, see **Custom Brushes** in **Chapter 3**.

Spray Can

The Spray Can sprays paint on the Canvas. When you select the Spray Can, an Options Box appears showing the 38 nozzles available.



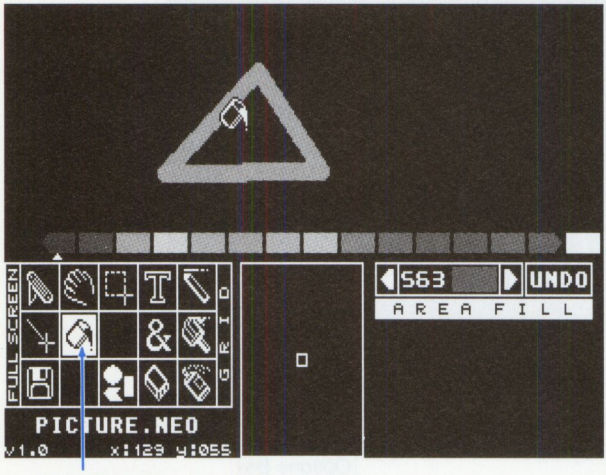
Select a nozzle from the Options Box (an outlined box appears around your selection). Then paint by sweeping the Spray Can across the Canvas while holding down the left mouse button. You will paint in an intermittent spray.

Spray in multicolors by holding down the right mouse button while using the Spray Can. Your sprays will paint all the colors enclosed by the two Delimiters in the Color Palette, flowing in order from left to right and then repeating.

Quickly sweeping the Spray Can over the Canvas paints color lightly. Spraying in close, slow strokes covers an area with solid color. Holding the Spray Can still and clicking either mouse button sprays a single dab.

Paint Bucket

The Paint Bucket "pours" color on the Canvas, filling an area. To use the Bucket, move it onto the Canvas until the "drop" from the Bucket is within the color area to be filled. Then click the left mouse button to pour the color.



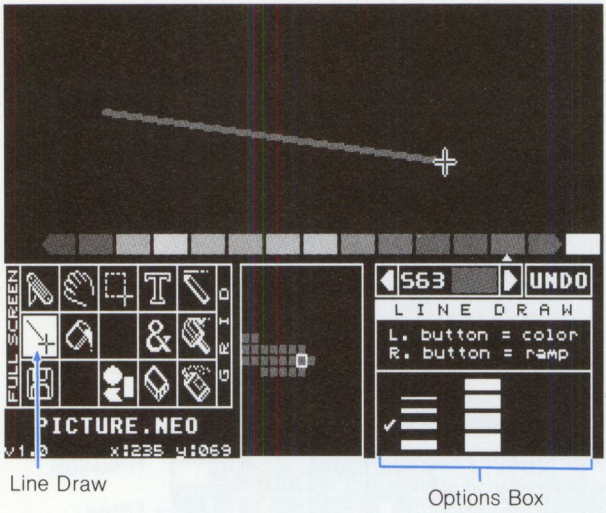
Paint Bucket

Note: Use your Magnifier for exact positioning of the drop within small areas. See **Color Map/Magnifier** in this chapter for more information.

The area you are filling must be completely outlined by other colors or the paint will leak out. When this happens, click on the Undo Box (or press the **[Undo]** key), shore up the break with another color, then repour.

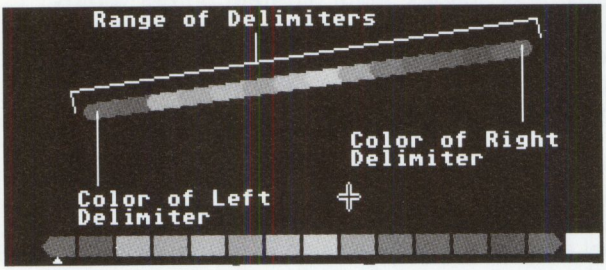
Line Draw

Line Draw draws a straight line from one chosen point (pixel) on the Canvas to another. The Options Box shows eight line-thickness options.



To draw a line, position the Tool at a starting point on the Canvas. Then hold down the left mouse button, move the Tool to an ending point, and release the button.

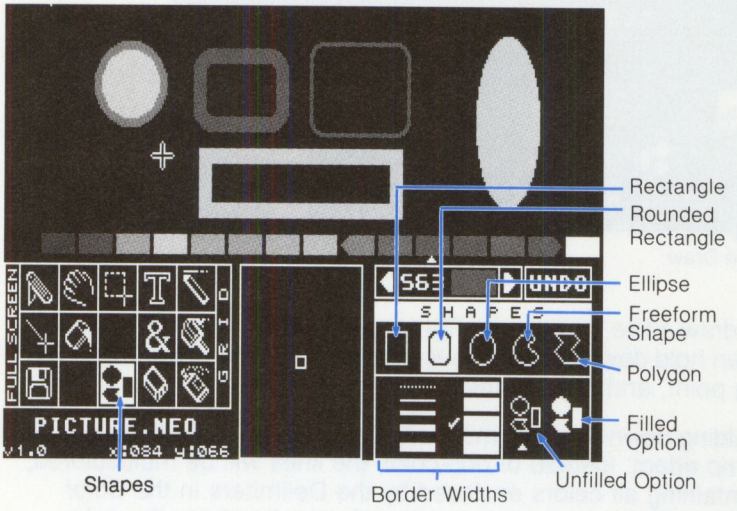
Holding down the right mouse button while drawing lines adds a ramp effect. Instead of one-color, the lines will be multicolored, containing all colors enclosed by the Delimiters in the Color Palette. The colors will "ramp" along the line from the color of the Left Delimiter to the color of the Right Delimiter.



To cancel a line being drawn, click the opposite mouse button before releasing the button used to draw the line.

Shapes

The Shapes Tool helps you create rectangles, rounded rectangles, ellipses, freeform shapes, and polygons. Shapes can be filled or unfilled; filled shapes can be bordered or borderless. Shapes are drawn in the selected Palette color; borders are drawn in the color of the Left Delimiter.

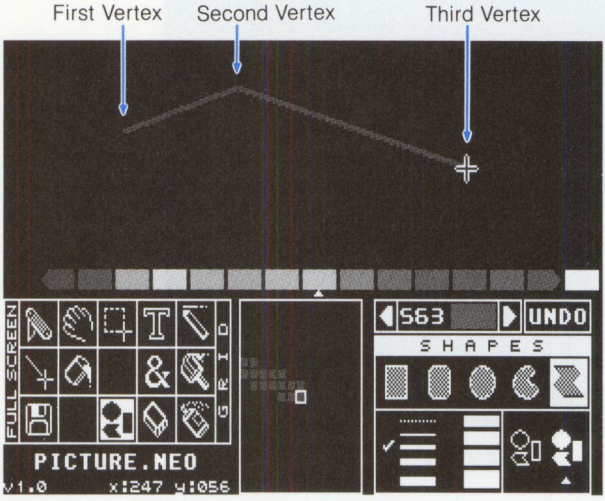


The Options Box contains five different shapes, a dotted line for drawing borderless shapes, eight different border widths, and the filled/unfilled options. The shape you select appears in reverse video. The dotted line or border width selected is indicated by a check. A pointer shows whether the Filled or Unfilled option has been selected.

To draw rectangles or ellipses, first select your options, then position the Tool at a starting point on the Canvas, hold down the left mouse button, and move the Tool in any direction. Moving the Tool expands or contracts your shape. When you've drawn the shape you want, release the mouse button.

To draw a freeform shape, hold down the left mouse button and draw. When you release the button, NEOchrome will connect the first and last strokes of your shape with a straight line and fill the shape with color (unless it is an unfilled shape).

To draw a polygon, click the left mouse button at a spot on the Canvas. This sets the shape's first vertex. Then move the Tool (without holding down the button) to draw a line from the first vertex to the second. Click the left mouse button to set the second vertex. Again draw a line, then click the left mouse button, setting the third vertex.

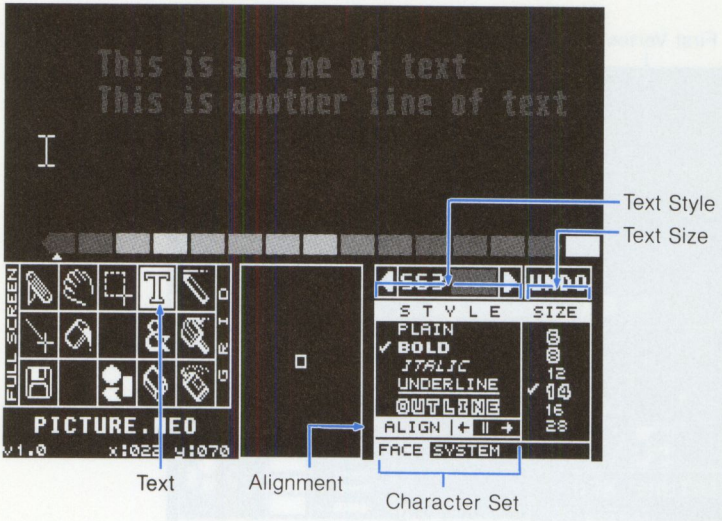


Continue in this way to the last vertex and click the right mouse button. NEOchrome will connect the first and last vertices with a straight line and fill the shape (unless the Unfilled option was selected).

Note: Freeform shapes and polygons have a maximum size. If you reach that size while drawing, NEOchrome will automatically close the shape.

Text

Text inserts letters, numbers, and symbols in your picture. The Options Box contains five different text styles, six different text sizes, three text alignment options, and two character set options.



Select a text style and size by pointing at the desired option and clicking the left mouse button. Bold, Italic, Underlined, and Outlined text can be used in combination; Plain text must be used alone. The text size is the height in pixels of the largest character in the text you will type. Checkmarks will show your selections.

Select a text alignment to center your text (II) or align it left (←) or right (→). Your choice appears in reverse video.

Click in the box next to FACE to toggle between the System character set (SYSTEM) and the Extended System character set (EXTENDED SYS.). Characters from the chosen system will appear on the Canvas when you type from the keyboard. (Most System characters are shown on the ST Computer keyboard; see **Appendix A** for a list of special System and Extended System characters.)

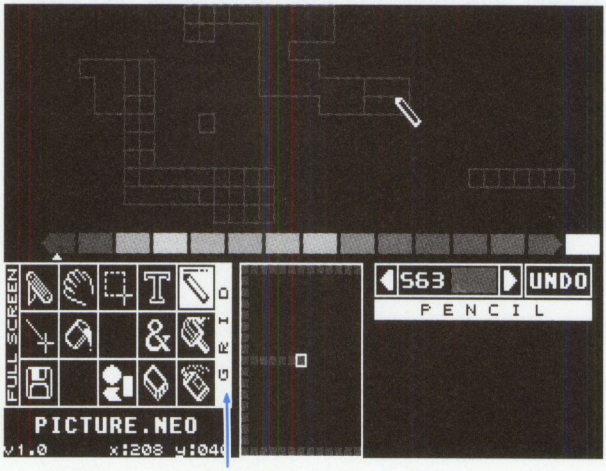
To write text, position the Tool on the Canvas, click the left mouse button, then move the Tool aside. A flashing cursor stays in the spot where you clicked. Then type your text from the keyboard. Centered text will be centered on the flashing cursor; left and right aligned text will move to either side. Press the **[Return]** key to start a new line in the same size and style.

You can change the color, style, size, and alignment of all text as long as you haven't repositioned the flashing cursor. To make changes, select another color from the Color Palette or other options in the Options Box (selecting the Plain option is a quick way to clear text styles). Your text will change when the option is selected. Toggling between System and Extended System will not affect text already keyed in.

To use more than one color, style, or size within a line, type to where you want the change, then reposition the flashing cursor on the same line. Change your options and continue typing.

Grid

When selected, Grid makes the Tool you're using "jump" to grid points as it is moved on the Canvas. Grid points are every eighth pixel on the Canvas, and their coordinates are always evenly divisible by eight.

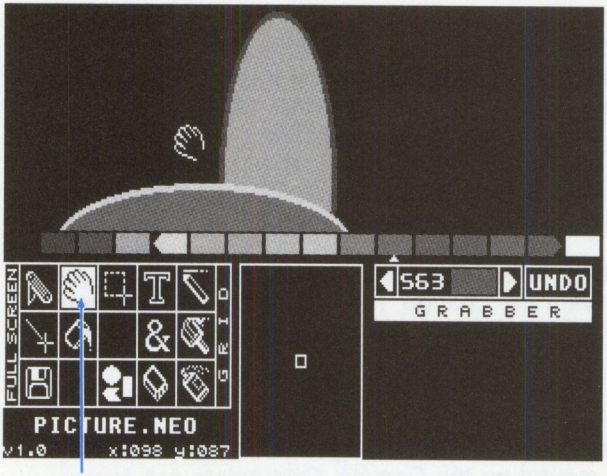


Grid works in conjunction with other Tools, and does not display an Options Box.

Tools for Moving the Canvas and Picture Sections

Grabber

The Grabber moves the half-size Canvas up and down, and identifies colors painted on the Canvas.



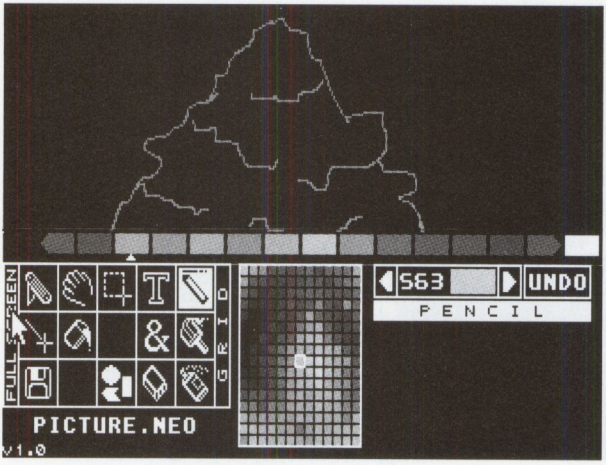
Grabber

Select the Grabber and move it onto the Canvas, hold down either mouse button, and move the Tool up or down. The Canvas will move with the Tool. Then release the mouse button. Your Canvas will stay in its new position.

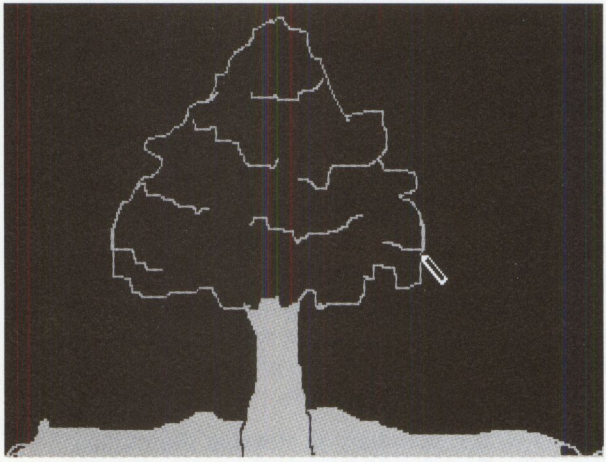
To identify a color on the Canvas, move the Grabber to that color (watch the Magnifier for exact positioning in small color areas). Click the right mouse button. The Color Selector will reposition under that color in the Palette so you can see exactly which color it is.

Full Screen

Selecting Full Screen displays the full-size Canvas, hiding the NEOchrome components. This lets you see and work on the whole Canvas at once.



Half-Size Canvas

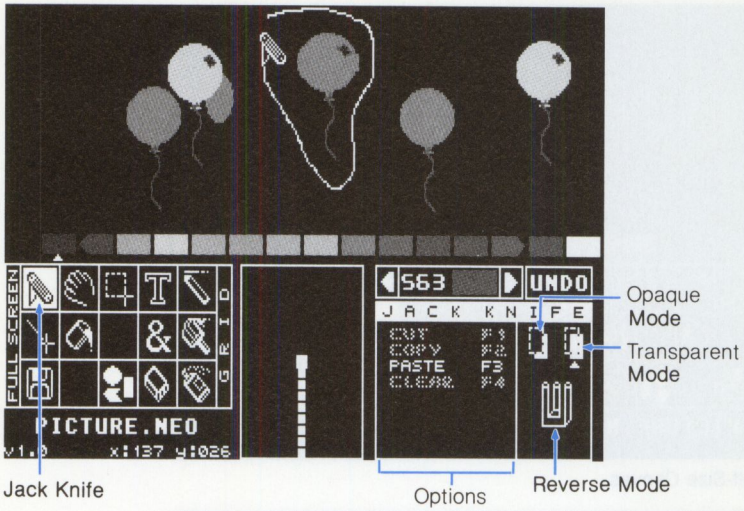


Full-Size Canvas

To redisplay the NEOchrome components, move the Tool as far as possible into any corner (except the upper left corner) of the Canvas and click the left mouse button. Or press the [Esc] key to toggle between the half- and full-size Canvas.

Jack Knife

The Jack Knife defines a freeform picture area in order to move or erase it.



Select the Jack Knife, then move it onto the Canvas, holding down either mouse button and "cutting" around an image or picture area. Then release the mouse button. A cycling line marks where you cut. Since the Jack Knife does not cut out background color, the cycling line will shrink to fit around the closest color other than background.

To move the section, push the tip of the Jack Knife into it. When the tip is in the section, the Jack Knife becomes an arrow. Now hold down the left mouse button and drag the section anywhere else on the Canvas. If you click the right mouse button first, then hold down the left mouse button, you can stamp the section in its original spot and move a copy of it.

When the section is where you want it, release the mouse button. Then move the Tool out of the section and click the left mouse button to erase the cycling line.

Holding down the right mouse button while dragging the picture area lets you "spray" with it. Moving the mouse quickly paints a few copies of the area along the way; dragging the mouse slowly paints many copies in the pattern of the mouse's motion.

The Jack Knife Options Box contains four options and three modes.

The options are available when they appear in bold letters. Select an option by clicking on it or pressing the corresponding function key on the keyboard. Click on a mode to select it; a marker indicates your choice.

CUT ([F1]) removes the defined area and stores it in the Cut Buffer.

COPY ([F2]) leaves the defined area on the Canvas and stores a copy of it in the Cut Buffer.

PASTE ([F3]) pastes the image from the Cut Buffer onto the center of the Canvas.

CLEAR ([F4]) erases the defined area without storing it in the Cut Buffer.

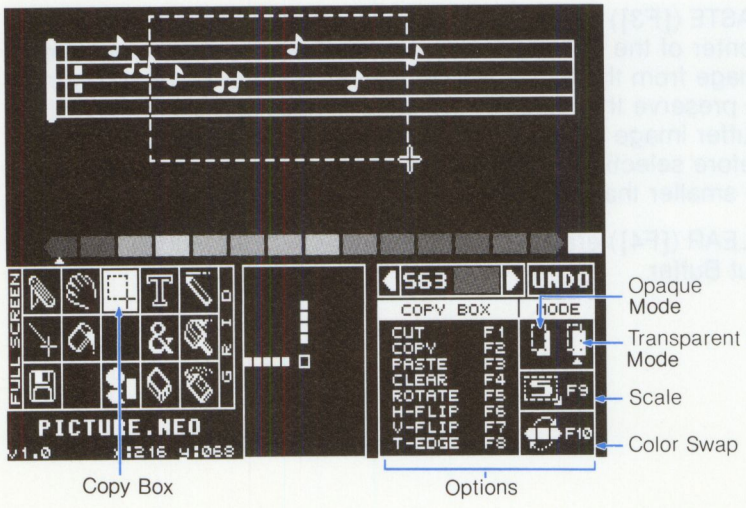
Opaque mode lets you move the defined area over the picture, covering up anything behind it.

Transparent mode makes background color within the defined area transparent, so that when you move the area, anything behind it shows through the "holes."

Reverse mode lets you move the defined area behind other images on the Canvas.

Copy Box

The Copy Box defines a rectangular picture area and manipulates it.



Select the Copy Box and move the Tool onto the Canvas to one corner of an area you want to define. Hold down the left mouse button, then drag the Tool diagonally to the opposite corner of the area. A cycling box will form around the area. Release the mouse button.

To move the picture area, point inside the box (the Tool changes to an arrow), hold down the left mouse button, and drag the area to another part of the Canvas. (If you click the right mouse button first, then hold down the left mouse button, you will leave the area in its original spot and move a copy of it.) Then click the right mouse button to stamp the image in its new location. You can repeat dragging and stamping the image as many times as you want. To erase the cycling box, move the Tool out of the box and click the left mouse button.

The Options Box contains eight options and four modes.

The options are available when they appear in bold letters. Select an option by clicking on it or pressing the corresponding function key on the keyboard.

Select a mode by clicking on it. A marker shows whether Opaque or Transparent mode has been selected; Scale appears in reverse video when selected. You can also select Scale or Color Swap by pressing the corresponding function key.

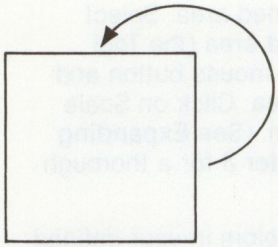
CUT ([**F1**]) removes the defined area and stores it in the Cut Buffer.

COPY ([**F2**]) leaves the defined area on the Canvas and stores a copy of it in the Cut Buffer.

PASTE ([**F3**]) pastes the image from the Cut Buffer onto the center of the Canvas. If you have defined a picture area, the image from the Buffer will be pasted in the area. (If you want to preserve the image in the defined area and paste the Cut Buffer image over it, click the right mouse button in the area before selecting PASTE.) If the image in the Buffer is larger or smaller than the defined area, it is scaled to fit.

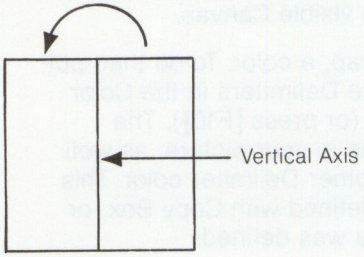
CLEAR ([**F4**]) erases the defined area without storing it in the Cut Buffer.

ROTATE ([F5]) rotates the defined area 90 degrees counter-clockwise. Four rotations takes the image through a complete circle.



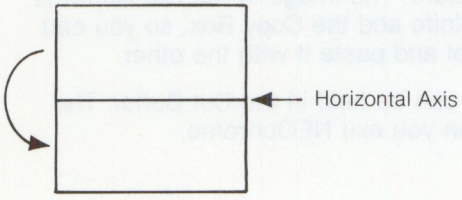
Rotate

H-FLIP ([F6]) horizontally flips the defined area about its central vertical axis. A second flip restores the image to its original orientation.



H-Flip

V-FLIP ([F7]) vertically flips the defined area about its central horizontal axis. A second flip restores the image to its original orientation.



V-Flip

T-EDGE ([F8]) traces a border around the edges of anything in a Copy Box that was drawn with the currently selected Palette color. The image so bordered is replaced with the background color.

Opaque mode lets you move the defined area over the picture, covering up anything behind it.

Transparent mode makes background color within the defined area transparent, so that when you move the area, anything behind it shows through the "holes."

Scale ([F9]) stretches or shrinks the defined area. Select Scale, then move the Tool into the defined area (the Tool changes to an arrow). Hold down the left mouse button and drag the arrow to stretch or shrink the area. Click on Scale again (or press [F9]) to turn off the option. (See **Expanding and Shrinking Picture Sections** in **Chapter 3** for a thorough description of how to use Scale.)

Color Swap ([F10]) swaps the Delimiter colors in your defined area. When this option is selected, the Right Delimiter color in the Color Palette replaces anything within the defined area drawn with the Left Delimiter color, and vice versa. Clicking on Color Swap again (or pressing [F10]) swaps the colors again. If you have not defined an area with Copy Box, selecting Color Swap affects your entire visible Canvas.

You can substitute, rather than swap, a color. To do that, put the Color Selector under one of the Delimiters in the Color Palette. Then click on Color Swap (or press [F10]). The selected Delimiter color will remain in your picture, as well as replace anything drawn in the other Delimiter color. This operation affects either the area defined with Copy Box, or the entire visible Canvas if no area was defined.

Cut Buffer

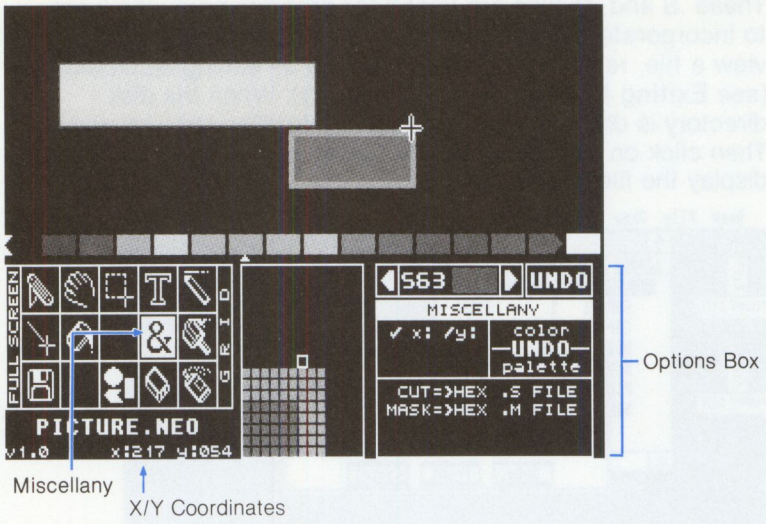
The Cut Buffer is the area of NEOchrome where a picture section is held after being cut out with the Jack Knife or Copy Box. The section can then be re-pasted into the original picture or into another picture. The image in the Cut Buffer is shared by both the Jack Knife and the Copy Box, so you can cut an image with one Tool and paste it with the other.

Only one image at a time can be held in the Cut Buffer. The Cut Buffer is emptied when you exit NEOchrome.

Special Tools

Miscellany

Miscellany lets you turn the x/y coordinates display on or off, and save portions of your picture in source code format for use in programming. This Tool also offers color and palette UNDO options.



When you choose the x:/y: option (indicated by a check), a Tool's position on the Canvas is shown in x/y coordinates below the Tool Grid. (For a complete description, see **X/Y Coordinates** in this chapter.)

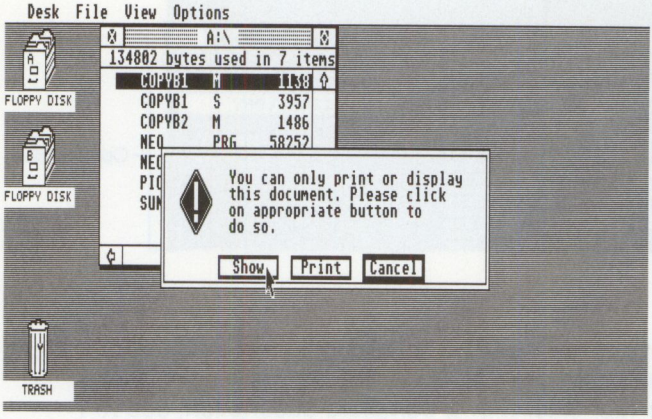
The UNDO option restores colors to their previous value. Clicking on the word "color" restores the selected Palette color to its previous value; clicking on the word "palette" restores the entire Color Palette to its previous values.

The Cut option, when selected, sends the contents of the Cut Buffer to an ASCII text file named COPYBn.S. (NEOchrome replaces n with a number from 1 to 999.)

The Mask option, when selected, sends the contents of the Cut Buffer to an ASCII text file named COPYBn.M. (NEOchrome replaces n with a number from 1 to 999.) The file is a monochrome mask of the graphics where pixels are either 0 for the background color or 1 for all other (non-background) colors.

Note: If the Cut Buffer is empty, NEOchrome tells you so in the Options Box when you select Cut or Mask.

These .S and .M files are useful for programmers who want to incorporate NEOchrome graphics into an application. To view a file, return to the GEM Desktop by exiting NEOchrome (see **Exiting NEOchrome** in **Chapter 1**). When the disk directory is displayed, double-click on the filename you want. Then click on the buttons in the Dialog Box to either print or display the file.



You can also load these files into a word processor for editing.

Disk

Disk lets you save the current picture to disk, load another picture onto the NEOchrome screen, or quit NEOchrome.

Select Disk with the left mouse button to save a picture or quit NEOchrome. Select it with the right mouse button to load a picture. (For complete instructions on Disk operations, see **Saving and Loading Pictures** and **Exiting NEOchrome** in **Chapter 1.**)

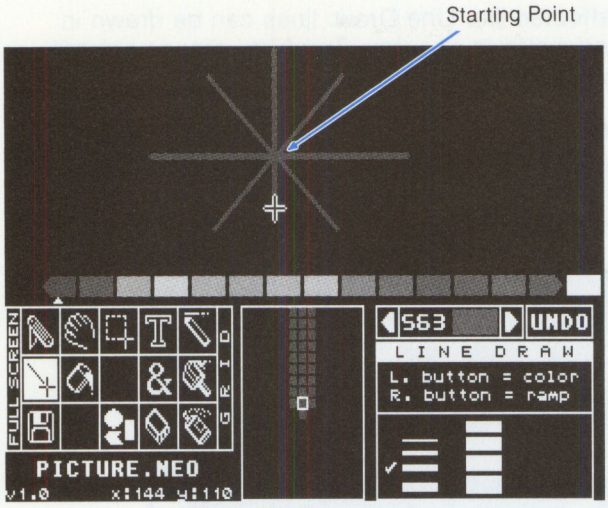
Constrain Mode

Constrain mode holds an action to a vertical or horizontal line. To use Constrain mode, hold down either **[Shift]** key, then begin moving a Tool on the Canvas. Once the Tool is moving, you can release the **[Shift]** key; the Tool stays in Constrain mode until you release the mouse button.

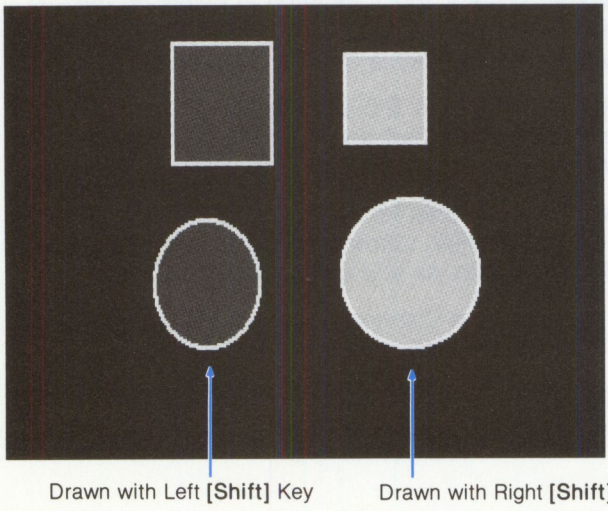
For the Pencil, Eraser, Paint Brush, and Spray Can, Constrain mode allows only horizontal or vertical painting or erasing.

For the Jack Knife and Copy Box, Constrain mode allows only horizontal or vertical movement when a defined picture section is dragged.

For Line Draw, Constrain mode allows lines to be drawn in only eight directions from a starting point.



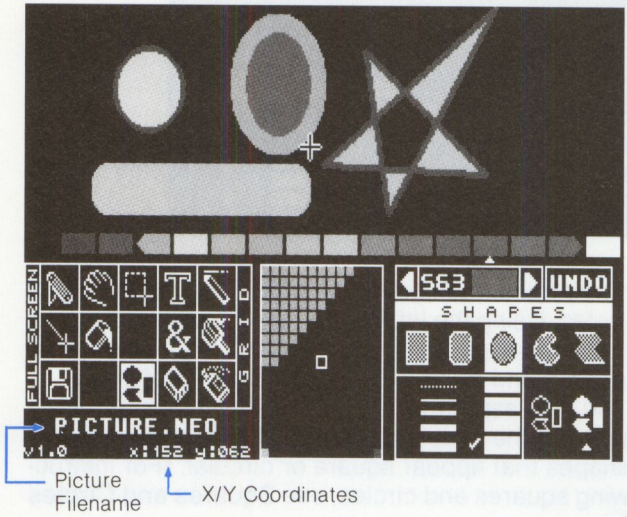
For Shapes, Constrain mode draws rectangles as squares, and ellipses as circles. Using the left **[Shift]** key forces the shape to be the same number of pixels horizontally and vertically, resulting in true squares and circles. Using the right **[Shift]** key corrects for the 9:10 aspect ratio of the pixels, making the vertical measure of the shape .9 times its horizontal measure, resulting in shapes that appear square or circular. (For instructions on drawing squares and circles, see **Squares and Circles** in **Chapter 3**.)



Polygons are affected like Line Draw: lines can be drawn in only eight directions from a vertex. Freeform shapes are not affected by Constrain mode.

Picture Filename

The filename of the picture currently on the Canvas is displayed below the Tool Grid. If you haven't named your picture, the filename will be PICTURE.NEO.



X/Y Coordinates

The x/y coordinates show a Tool's location in pixels on the Canvas. These coordinates change as you move the Tool, and are not displayed when the Tool is moved off the Canvas.

The x coordinate identifies the Tool's horizontal pixel, and can be any number from 0 to 319, starting from the left edge of the Canvas. Its value increases as you move the Tool to the right.

The y coordinate identifies the Tool's vertical pixel, and can be any number from 0 to 199, starting from the top of the Canvas. Its value increases as you move the Tool down.

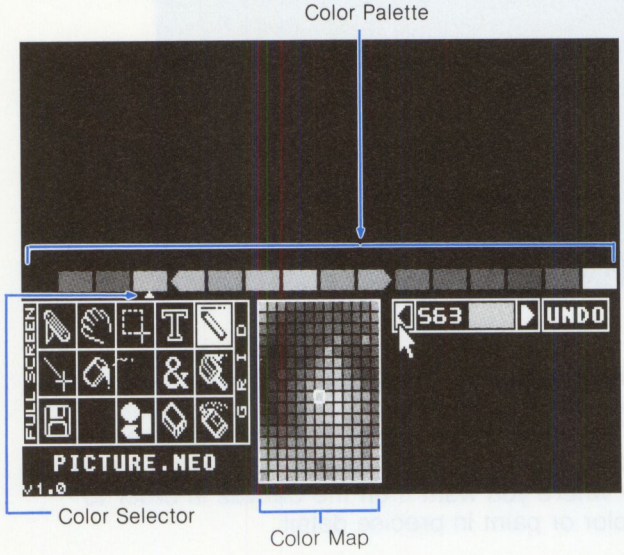
The upper left corner of the Canvas is position 0:0; the bottom right corner of the full-size Canvas is position 319:199.

You can turn the x/y coordinates display on and off with Miscellany (see **Miscellany** in this chapter).

Color Map/Magnifier

The Color Map/Magnifier displays either an orderly map of the 512 colors available in NEOchrome, or a magnified view of your picture showing individual pixels for detailed drawing.

The Color Map appears when the mouse pointer is on or below the Color Palette.

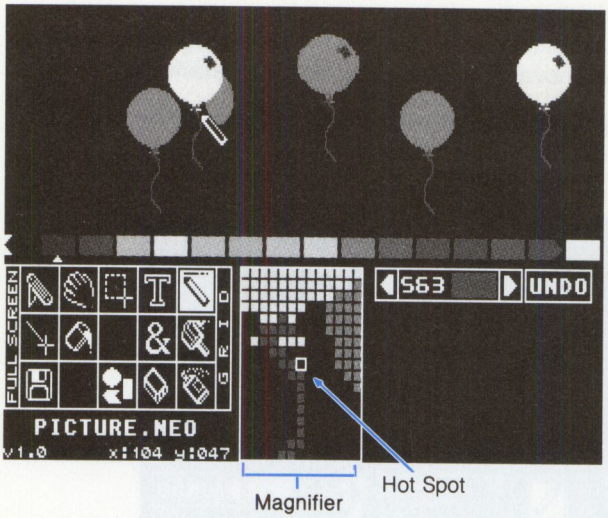


The Map contains 512 colors; 208 colors at a time are displayed. To look at all the colors, move the pointer onto the Map and hold down the right mouse button. The Grabber will appear. Move the Grabber left or right while holding down the button to view the entire range of 512 colors. The color outlined in white in the Map is currently showing in the Color Mixer.

You can copy a color from the Color Map into the Color Palette. Point to a color in the Map and double-click the left mouse button. The color will appear in the Color Palette above the Color Selector, replacing the previous color there and on the Canvas.

You can also put colors from the Color Map into the Color Mixer. Point to a color in the Map and single-click the left mouse button. The color will appear in the Color Mixer.

The Magnifier appears when a Tool is on the Canvas.



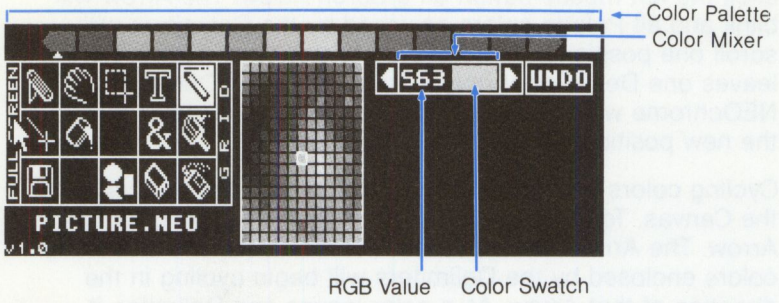
The Magnifier displays an enlarged (5X) view of the Canvas, clearly showing individual pixels. The Hot Spot, the outlined pixel in the center of the Magnifier, is a Tool's pixel position on the Canvas. By watching the Magnifier, you can position a Tool exactly where you want it on the Canvas in order to identify a color or paint in precise detail.

Color Mixer

NEOchrome offers 512 colors, each combining different intensities of red, green, and blue. This color system is called RGB (Red, Green, Blue). On the ST Computer, the intensity levels of red, green, and blue are numbered from 0 (least intense) to 7 (most intense).

A color is identified by its RGB value: three digits representing the red, green, and blue intensities, in that order, of the color. RGB 000 is black, RGB 777 is white, and RGB 700, 070, and 007 are pure red, pure green, and pure blue, respectively. There are 512 RGB combinations (8 x 8 x 8 = 512), making possible 512 colors.

The Color Mixer displays a color and its RGB value. You can mix colors by changing the digits in the RGB value.

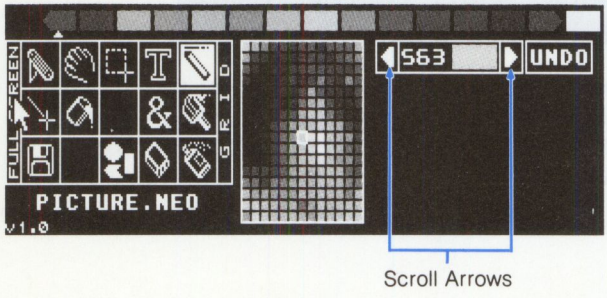


To change the RGB value, click either mouse button on a digit. Clicking the left mouse button increases the digit's value; clicking the right mouse button decreases its value. As each digit changes, the color in the Mixer adjusts to reflect the new value.

To copy the color from the Color Mixer into the Color Palette, double-click the left mouse button on the color swatch in the Mixer. The color will appear in the Palette above the Color Selector, replacing the previous color there and on the Canvas. (To copy a color from the Color Palette into the Mixer, double-click the left mouse button on the color in the Palette. The color swatch and RGB value will be updated.)

Scroll Arrows

The Scroll Arrows let you scroll the Color Palette left or right, color by color. You also use the Arrows to achieve color cycling, which is continuous scrolling.



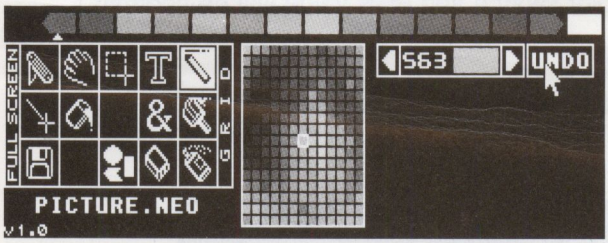
Scrolling the Palette rearranges the positions of the Palette colors between the Delimiters, one color at a time. To scroll, click the left mouse button on a Scroll Arrow. The Arrow will blink and all Palette colors enclosed by the Delimiters will scroll one position in the direction of that Arrow. As a color leaves one Delimiter, it reappears in the other Delimiter. NEOchrome will adjust the colors in your Canvas to reflect the new positions of the colors in the Palette.

Cycling colors lets you create motion or blinking effects on the Canvas. To cycle, click the right mouse button on a Scroll Arrow. The Arrow will appear in reverse video, and all Palette colors enclosed by the Delimiters will begin cycling in the direction of that Arrow. As a color leaves one Delimiter, it reappears in the other. The colors in your Canvas will cycle as the Palette cycles. To stop cycling, click either mouse button on the opposite Scroll Arrow.

You can also set the speed of your color cycling. For more information, see **Cycling Colors** in **Chapter 3**.

Undo Box

The Undo Box lets you erase ("undo") the graphics action most recently performed on the Canvas. To undo, click the left mouse button on the Undo Box (or press the **[Undo]** key).



NEOchrome will erase only your last action; you can't "undo" any actions before that. However, you can undo an Undo operation. Click on the Undo Box again. The former look of the Canvas will reappear.

CHAPTER 3
NEOCHROME TECHNIQUES

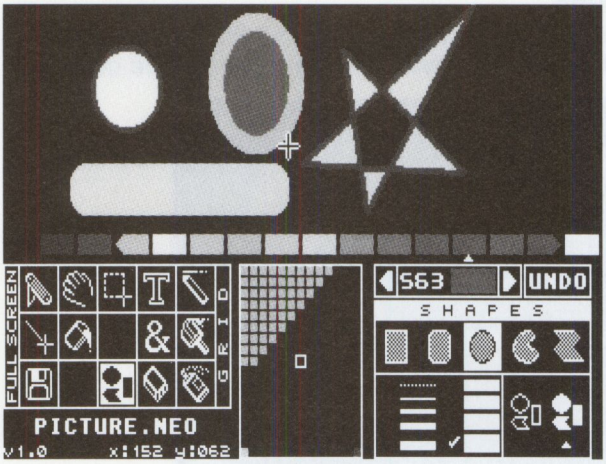
This chapter explains the more advanced graphics techniques available in NEOchrome, in step-by-step instructions. The end of the chapter gives information for achieving special effects and running the NEOchrome slideshow.

Drawing Shapes

NEOchrome provides five basic shapes: rectangle, rounded rectangle, ellipse, freeform shape, and polygon. Shapes can be drawn filled (bordered or borderless) or unfilled.

Filled Shapes

Filled shapes appear as solid objects, either bordered or borderless. These shapes are drawn in the selected Palette color; borders are the color of the Left Delimiter.



To draw a filled shape, follow these steps:

1. Select Shapes from the Tool Grid and a color from the Palette.
2. Select the Filled option by clicking on the filled shapes in the lower right corner of the Options Box. (The shapes across the top of the Options Box will become filled.)

3. Select a shape by clicking on one of the shapes across the top of the Options Box.
4. Select a border width by clicking on one of the Border options along the left edge of the Options Box. For a borderless shape, choose the dashed line. Select a border color by moving the Left Delimiter to your color choice.

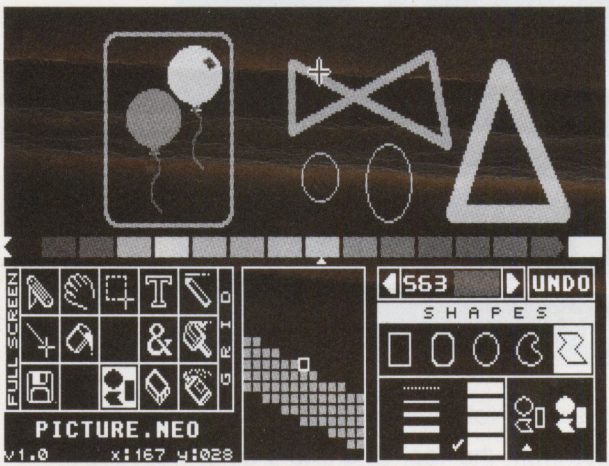
Note: You cannot move the Left Delimiter past the Right Delimiter. If the Right Delimiter is in the way, first drag it to the far right of the Color Palette, then move the Left Delimiter to your desired color.

5. Position the Tool on the Canvas, hold down either mouse button, and move the Tool in any direction.
6. When you've drawn the shape you want, release the mouse button.

Note: Borderless, filled freeform shapes and polygons will have a border while being drawn, but will be correctly colored and borderless when completed.

Unfilled Shapes

Unfilled shapes appear as outlines, framing the picture inside them. These shapes are drawn in the selected Palette color.



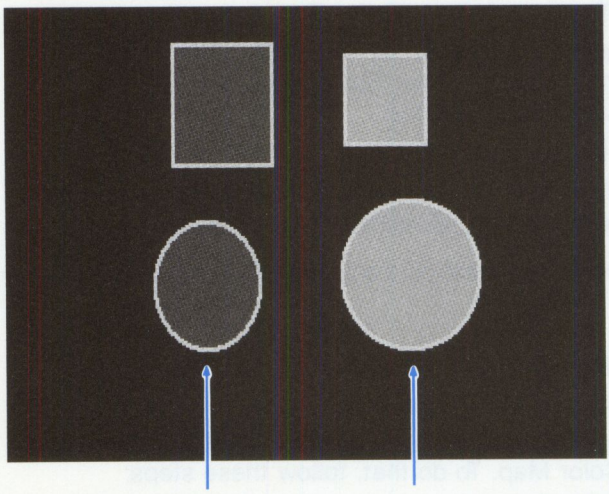
To draw an unfilled shape, follow these steps:

1. Select Shapes from the Tool Grid and a color from the Palette.
2. Select the Unfilled option by clicking on the unfilled shapes in the lower right corner of the Options Box. (The shapes across the top of the Options Box will become unfilled.)
3. Select a shape by clicking on one of the shapes across the top of the Options Box.
4. Select a border width by clicking on one of the Border options along the left edge of the Options Box.
5. Position the Tool on the Canvas, hold down either mouse button, and move the Tool in any direction.
6. When you've drawn the shape you want, release the mouse button.

To place an unfilled shape on the Canvas without having the picture under it show through, first draw the shape, then use the Paint Bucket to fill it with background color.

Squares and Circles

Squares and circles are drawn with the Shapes Tool and Constrain mode (the right and left **[Shift]** keys).



Drawn with Left **[Shift]** Key Drawn with Right **[Shift]** Key

To draw squares and circles, follow these steps:

1. Select Shapes from the Tool Grid and a color from the Palette.
2. Select your options from the Options Box. For squares, choose the rectangle; for circles, choose the ellipse.
3. Press and hold down the right or left [Shift] key to activate Constrain mode. Holding down the left [Shift] key gives you a true circle or square with the same number of pixels in its vertical axis as in its horizontal axis. Holding down the right [Shift] key makes the vertical axis of the shape .9 times its horizontal axis, correcting for the 9:10 aspect ratio of the pixels and resulting in a shape that appears square or circular.
4. Position the Tool on the Canvas, hold down either mouse button, and move the Tool in any direction. (Once you begin moving the Tool, you can release the [Shift] key.)
5. When you've drawn the square or circle you want, release the mouse button.

Erasing with Painting Tools

Painting Tools (Paint Brush, Spray Can, Line Draw, Paint Bucket, and Shapes) can also be used as erasers by painting in the background color. To erase with a painting Tool, follow these steps:

1. Select a painting Tool from the Tool Grid and a size or shape from the Options Box. For Shapes, choose the Borderless and Filled options.
2. Select the background color in the Color Palette.
3. Move the Tool onto the Canvas and erase by holding down the left mouse button and painting in the background color.

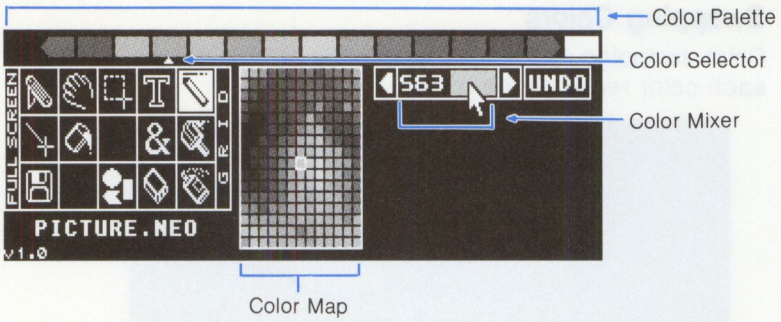
To restore the picture, click on the Undo Box (or press the [Undo] key).

Working with Colors

Changing Colors in the Palette

You can change Palette colors by using either the Color Mixer or the Color Map. To do that, follow these steps:

1. Click on a Palette color you want to change. The Color Selector will move under that color.
2. To copy the color currently in the Color Mixer into the Palette, move the mouse pointer onto the color swatch in the Mixer and double-click the left mouse button.



3. To copy a color from the Color Map into the Palette, point at the desired color in the Map and double-click the left mouse button. (To view all colors in the Map, move the pointer onto the Map, then press and hold down the right mouse button. When the Grabber appears, move it left and right.)

The new color replaces the previous color in the selected Palette position and on the Canvas. To restore the previous color, select Miscellany from the Tool Grid, then click on color UNDO in the Options Box.

Copying a Palette Color

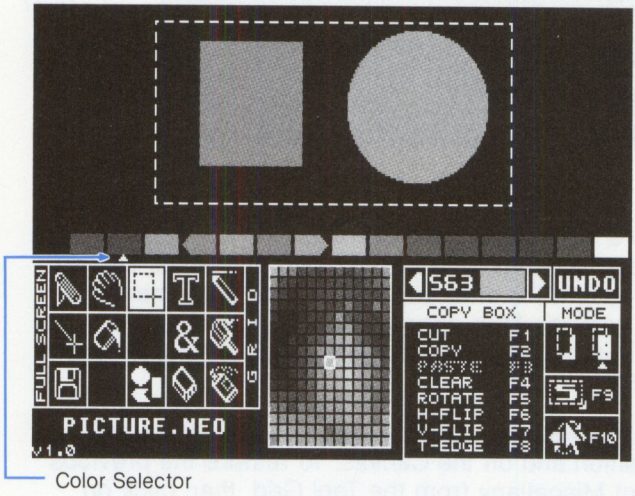
You can copy a color from one Palette position into another (this is especially useful when setting up color cycling). To do that, follow these steps:

1. In the Palette, double-click the left mouse button on the color to be copied. That color appears in the Color Mixer.
2. Single-click the left mouse button on the Palette location you want to copy the color into. The Color Selector moves under that position.
3. Double-click the left mouse button on the color swatch in the Color Mixer.

The color is copied from the Color Mixer into the selected Palette position. You now have the same color in two different locations in the Palette.

Swapping Colors

Color swapping exchanges two colors on the Canvas, so that each color replaces the other.



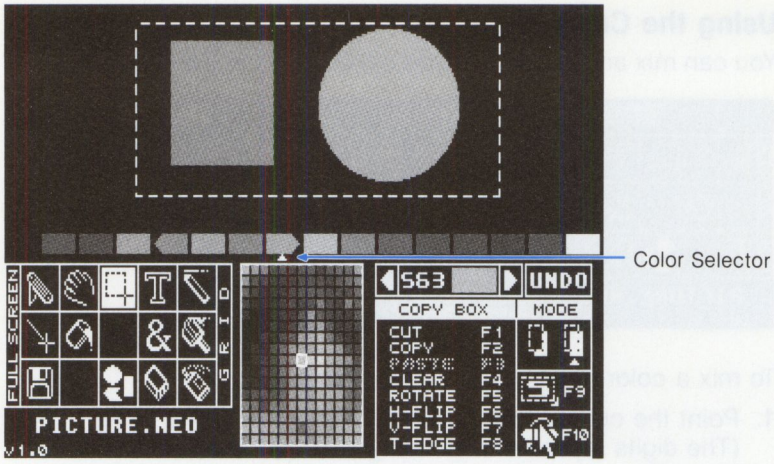
To swap colors, follow these steps:

1. Move the Left and Right Delimiters to the two Palette colors you've drawn with.
2. Make sure the Color Selector is NOT under one of the Delimiters.
3. Choose Copy Box from the Tool Grid.
4. Define a Copy Box around the area you want to affect.
5. Click the left mouse button on Color Swap in the Options Box (or press **[F10]**). The two Delimiter colors will replace each other in the Copy Box.

You can swap colors throughout the visible Canvas. To do that, omit step 4 (do not define a Copy Box).

Substituting Colors

Color substitution replaces one color on the Canvas with another. For example, if you draw a square in one color and a circle in another, you can then repaint the circle in the same color as the square.



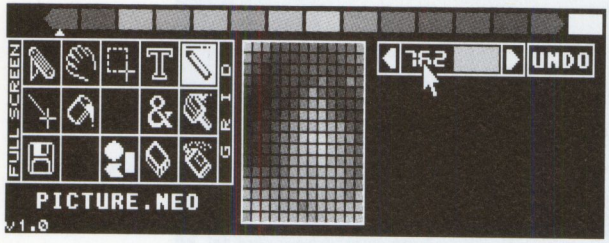
To substitute colors, follow these steps:

1. Move the Left and Right Delimiters to the two Palette colors you've drawn with.
2. Decide which of the two colors will be the source color (the color you will substitute with). Click the left mouse button on that color to select it with the Color Selector. The other color becomes the destination color (the color to be replaced with the source color). If the Color Selector is NOT placed under one of the Delimiter colors, you will get color swapping instead of color substitution.
3. Choose the Copy Box from the Tool Grid.
4. Define a Copy Box around the area you want to affect.
5. Click the left mouse button on Color Swap in the Options Box (or press **[F10]**). The source color replaces the destination color in the Copy Box.

You can substitute one color for another throughout the visible Canvas. To do that, omit step 4 (do not define a Copy Box).

Using the Color Mixer

You can mix any of NEOchrome's 512 colors in the Color Mixer.



To mix a color in the Mixer, follow these steps:

1. Point the cursor at one of the digits in the Color Mixer. (The digits represent the red, green, and blue values of the color in the Mixer. Values range from 0, least intense, to 7, most intense.)
2. Press the left mouse button to increase the digit; press the right mouse button to decrease it. The color in the Mixer will adjust to reflect the new value.
3. To copy a color from the Mixer into the Color Palette, double-click the left mouse button on the color swatch in the Mixer. The Mixer color will appear in the selected Palette position, replacing the previous color there and on the Canvas.

Working with a color in the Mixer does not affect the Palette or the Canvas until you move the Mixer color into the Palette. To restore the previous Palette color, select Miscellany from the Tool Grid, then select color UNDO from the Options Box.

You can copy colors into the Mixer from both the Color Palette and Color Map. To copy from the Palette, double-click the left mouse button on the color in the Palette. To copy from the Map, single-click the left mouse button on the color in the Map.

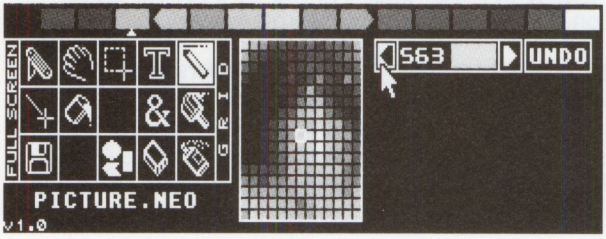
Cycling Colors

You can cycle (continuously scroll) the Color Palette left or right between the two Delimiters, creating motion or blinking effects in your picture. You can also set the cycling direction and speed.

To cycle colors, follow these steps:

1. Select the Left Delimiter and drag it to the leftmost Palette color you want to include in the cycle.

2. Do the same with the Right Delimiter, moving it to the rightmost Palette Color you want to include.
3. Point to one of the two Scroll Arrows on either side of the Color Mixer and click the right mouse button. The Arrow will appear in reverse video.



When you click the right mouse button, the Palette colors will begin a continuous scroll in the direction of the Scroll Arrow clicked on. As a color leaves one end of the range enclosed by the Delimiters, it reappears at the opposite end. The colors on your Canvas will continuously adjust to reflect the scrolling action.

You can set the direction and speed of your cycling by working with the Scroll Arrows and mouse buttons. To do that, follow this chart:

Original Palette State	Mouse Button Clicked	Scroll Arrow Clicked On	
		◄ Left	► Right
No scroll	Left	Scrolls left once	Scrolls right once
	Right	Starts left color cycling	Starts right color cycling
Left color cycling	Left	Increases cycling speed	Stops cycling
	Right	Decreases cycling speed	Stops cycling
Right color cycling	Left	Stops cycling	Decreases cycling speed
	Right	Stops cycling	Increases cycling speed

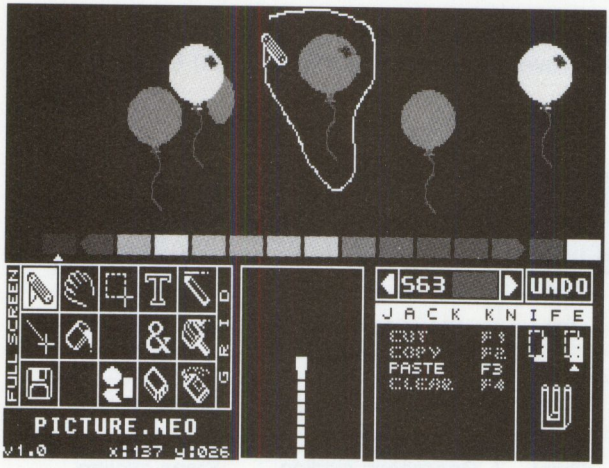
For example, you can begin color cycling to the left by clicking the right mouse button on the left Scroll Arrow. Then, you can speed up the cycling by clicking the left mouse button on the same (left) Scroll Arrow. Next, you can decrease the cycling speed by clicking the right mouse button on the same (left) Scroll Arrow. Finally, you can stop cycling by clicking either mouse button on the opposite (right) Scroll Arrow.

The information you set up for cycling your colors is saved along with your picture when you save the picture to disk. To activate color cycling for a NEOshow slide program, be sure color cycling is turned on when you save your picture. (See **Running the NEOchrome Slideshow** in this chapter for more information.)

Working with Picture Sections

Using the Jack Knife

The Jack Knife lets you cut out a freeform area of the screen and move it about.



To use the Jack Knife, follow these steps:

1. Select the Jack Knife from the Tool Grid.
2. With the Jack Knife on the Canvas, hold down the left mouse button and "cut" around a picture section. Then release the mouse button. A cycling "cut" line shrinks itself around all pixels in the section that are not background color. This defines the section.

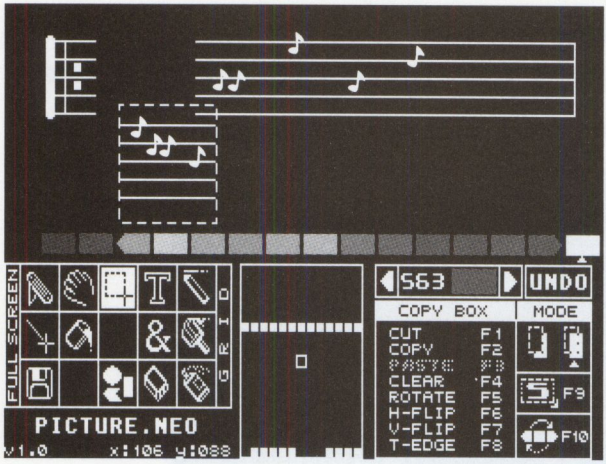
3. Move the tip of the Jack Knife into the defined area. When the tip of the Knife touches a pixel in the defined area, the Tool becomes an arrow.
4. When the arrow appears, press and hold down the left mouse button.
5. Move the arrow. The cut section will move along with it, out of its original position.
6. To move a copy of the cut portion (and not actually cut it out of the picture), click the right mouse button before moving the arrow. This stamps a copy of the section in its original spot.

You can stamp a copy of the cut portion onto the Canvas at any time by clicking the right mouse button (while continuing to hold down the left mouse button). You can paint with the cut portion by holding down the right mouse button as you move the arrow.

For instructions on using the Jack Knife options, see **Jack Knife** in **Chapter 2**.

Using the Copy Box

The Copy Box defines a rectangular area of your picture for moving, copying, and manipulating.



To use the Copy Box, follow these steps:

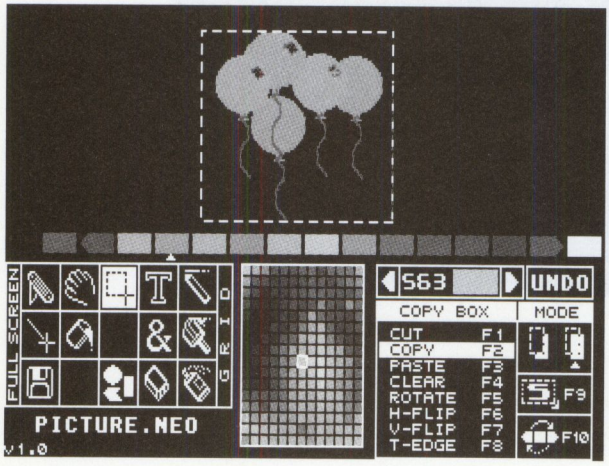
1. Select the Copy Box from the Tool Grid.
2. Move the Tool onto the Canvas to the spot where you want to start your Copy Box.
3. Hold down the left mouse button and move the Tool in any direction. A rectangular Copy Box, anchored at the original spot, will follow the Tool.
4. Release the mouse button to set the Copy Box, defining a picture section.
5. Move the Tool into the Copy Box. When the Tool changes to an arrow, press and hold down the left mouse button.
6. Move the arrow. The defined section moves along with the arrow, out of its original position.
7. To move a copy of the defined section (and not actually cut it out of the picture), click the right mouse button before moving the arrow. This stamps a copy of the section in its original spot.

You can stamp a copy of the defined section onto the Canvas at any time by clicking the right mouse button.

For instructions on using the Copy Box options, see **Copy Box** in **Chapter 2**.

Pasting Picture Sections

After you cut picture sections out of a picture, you can paste them back in, or paste them into another picture. To do that, you use the Jack Knife, Copy Box, and Cut Buffer.



To cut out and paste picture sections, follow these steps:

1. Define a picture section with the Jack Knife or Copy Box.
2. Select CUT from the Options Box (or use the **[F1]** key) to cut the image from the picture into the Cut Buffer. Or select COPY from the Options Box (or use the **[F2]** key) to copy the image from the picture to the Buffer, leaving the original intact. The PASTE option in the Options Box now becomes active, indicating that something is in the Cut Buffer.
3. Now that the image is in the Cut Buffer, you can go on to other tasks, including loading a new picture, without disrupting the image.
4. To bring the picture back from the Cut Buffer, select the Jack Knife or Copy Box from the Tool Grid and click on PASTE in the Options Box (or press **[F3]**).

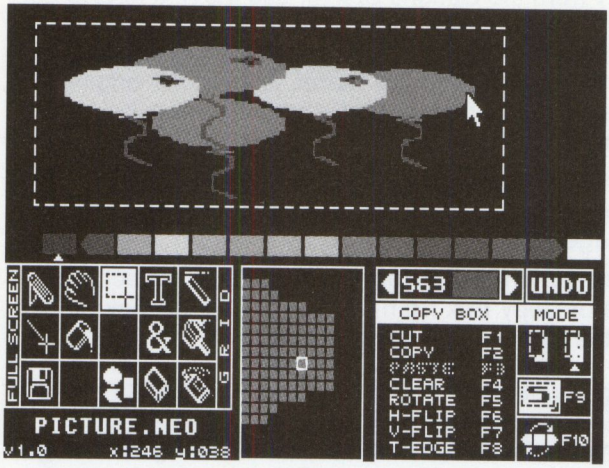
How the image is pasted from the Cut Buffer depends on the Tool selected. If you are using the Jack Knife, the image is pasted into the center of the Canvas. You can drag this image anywhere you want on the Canvas before stamping it with the right mouse button or setting it with the left mouse button.

If you selected the Copy Box and did not define a Copy Box on the picture, the pasted image will create its own Copy Box in the center of the Canvas. If a Copy Box is defined when you paste, the image appears inside this Box, scaled to fit. You can drag this image anywhere on the Canvas before stamping it with the right mouse button or setting it with the left mouse button.

You can use the pasting process to make a library of images. Cut out images from different pictures and paste them onto a separate Canvas reserved for that purpose.

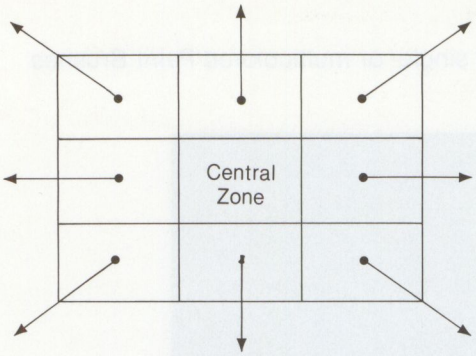
Expanding and Shrinking Picture Sections

The Copy Box lets you scale a selected image to a new size.



To scale an image, follow these steps:

1. Select the Copy Box from the Tool Grid.
2. With the Tool on the Canvas, draw a Copy Box around the portion of the picture you want to resize. Or paste an image from the Cut Buffer by selecting PASTE (**[F3]**) in the Options Box.
3. Select Scale from the Options Box (or press **[F9]**). The option symbol will appear in reverse video.
4. Move the Tool into a scale zone of the Copy Box (the Tool changes to an arrow), hold down the left mouse button, and move the arrow in the desired direction of scaling. The diagram divides a defined area into zones. By putting the arrow in any of the outside zones and dragging it in the direction shown, you can stretch or shrink the defined area. By putting the arrow in the central zone and dragging it, you can move the defined area.



The image is resized according to your mouse movements. To set the image, move the Tool outside the Copy Box and click the left mouse button. Then click on Scale again (or press **[F9]**) to turn off the option.

Special Effects

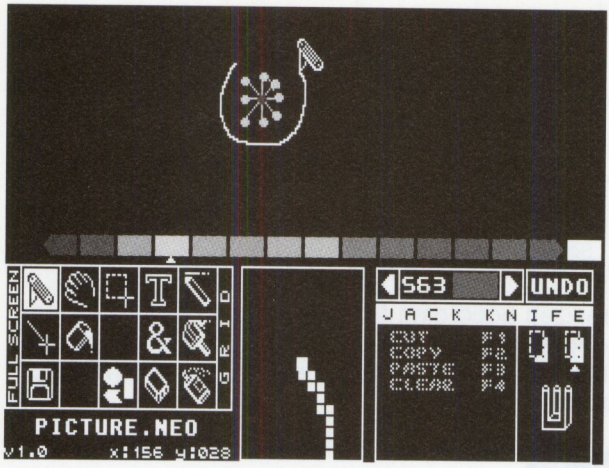
This section offers instructions for creating special effects in your NEOchrome pictures. As you work, you will want to change colors in your Palette, customizing it for each picture. To use your colors most effectively, begin working with a few colors of similar shades. Then bring in highlights as your picture progresses.

Save your picture when it's at a point where you like it, or when you're ready to make a bold change. You can always retrieve this original later if you don't like how your picture turns out. The Palette you set up for your picture, including background color, Delimiter positions, and color cycling, will be saved with your picture.

Keep in mind that in the half-size Canvas your actions will only affect the visible portion of your picture.

Custom Brushes

You can create your own single- or multicolored Paint Brushes by following these steps:

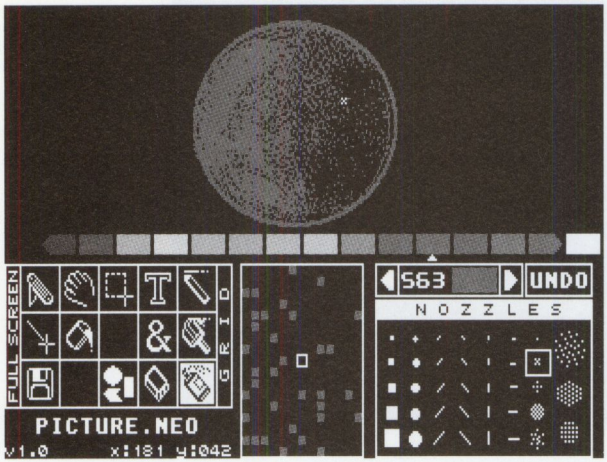


1. Use an out-of-the-way portion of your Canvas as a scratch pad and create a brush pattern there in one or several colors. Patterns with more background color make better brushes.
2. Cut the brush out using the Jack Knife.
3. Paint with the brush. Move the Jack Knife into the defined area, hold down the left mouse button, and then drag the area, pressing and releasing the right mouse button.

Each time you press the right mouse button, the defined image will be painted on the Canvas. If you hold down the right button and move the mouse, you can spray the image on the Canvas. Store your brush in the Cut Buffer or on another Canvas.

Shading

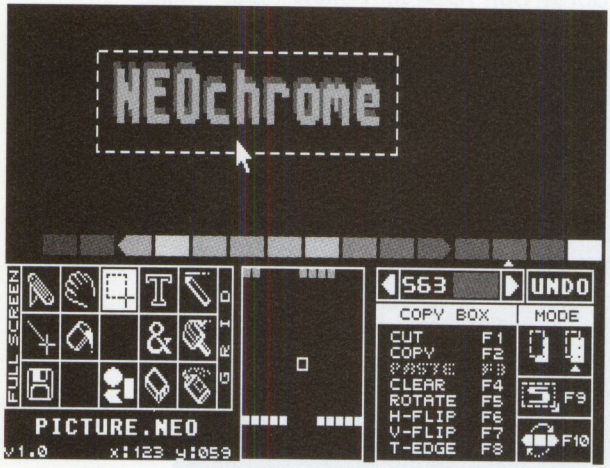
You can create a dark to light shading effect by using successively smaller Spray Can nozzles. Follow these steps:



1. Select the Spray Can from the Tool Grid.
2. For the dark region, select a dense nozzle from the Options Box and paint with slow, deliberate strokes.
3. For lighter regions, select less dense nozzles and paint intermittently (clicking the left mouse button repeatedly) with quick strokes.
4. Heighten the shading effect by using progressively lighter colors and ramp colors.

Shadowed Text

You can create text with a background shadow.



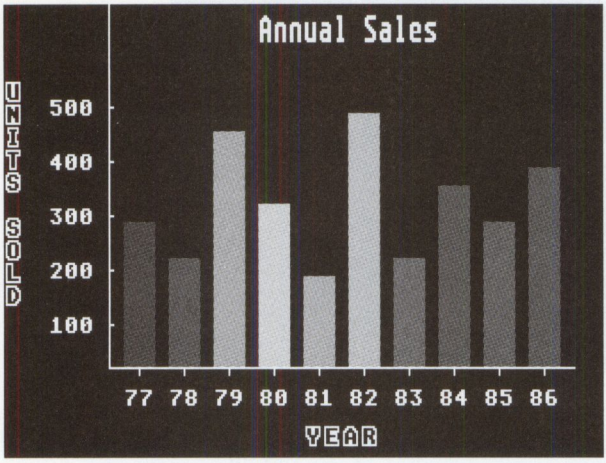
Begin with an empty Canvas. Then follow these steps:

1. Decide on two colors: one for shadow, one for text. For best results, the shadow color should be darker than the text color. Move the Delimiters onto the two colors.
2. Select Text from the Tool Grid and options from the Options Box. On the Canvas, write your text in the shadow color.
3. Select Copy Box from the Tool Grid. In the Color Palette, move the Color Selector to a color you are not using.
4. Draw a Copy Box around your text, stamp it with the right mouse button, then move it to another section of your Canvas.
5. With the Copy Box still surrounding your text, select Color Swap (**[F10]**) from the Options Box. The text color will replace the shadow color in the Copy Box.
6. Select Transparent mode from the Options Box.
7. Drag the Copy Box over the original shadow-colored text. Adjust the Copy Box until the text and its shadow are positioned the way you want them. Then release the mouse button.
8. Select COPY **[F2]** from the Options Box to save your text into the Cut Buffer.

You can now move your shadowed text into a NEOchrome picture by loading the picture, and selecting the Jack Knife or Copy Box and the PASTE ([F3]) option.

Charts and Graphs

NEOchrome is well suited for making charts and graphs.



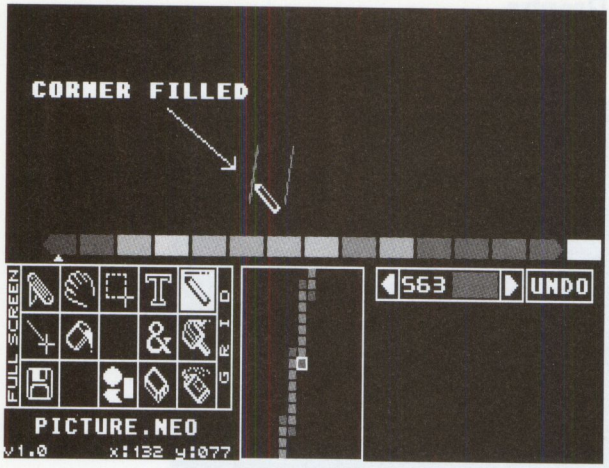
Follow these steps:

1. Select Grid from the Tool Grid to keep everything evenly spaced.
2. Use Line Draw or Shapes to draw the border of the graph, and label it with Text.
3. Various Tools will come in handy depending on the type of graph you're drawing. Use a filled rectangle for bar graphs and Line Draw for line graphs. Draw a picture, such as a car or dollar bill, then use the Jack Knife to make a pictograph.

Once you've created a series of designs, you can use the NEOshow program to present your work.

Anti-Aliasing (No Jaggies)

Because the pixels on the Canvas are rectangular, lines drawn at peculiar angles have a stairstep look.



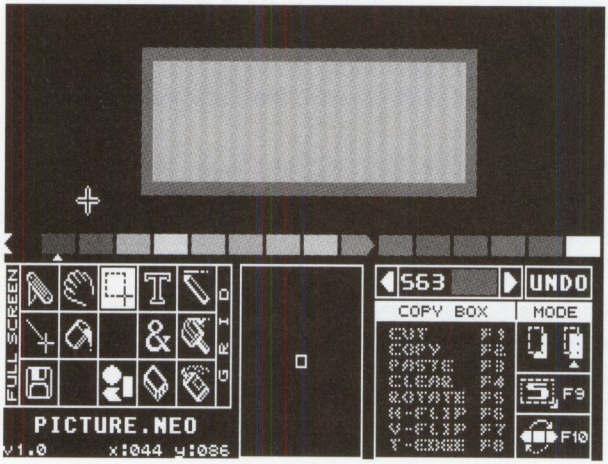
An anti-aliasing algorithm can be applied to smooth the line, but calculating this by hand is time consuming. You can easily get a close approximation of an anti-aliased line by "corner filling." To do that, follow these steps:

1. Select a color halfway between the color of the line and its surrounding background. For example, for a light blue line on a dark background, choose a dark or medium blue.
2. Use the Pencil and the Magnifier to fill in the corners of the line with the selected color.

The corner-filled line appears much smoother and adds a professional touch to your graphics. It is especially useful on italicized text.

Pattern Fills

You can fill a region with a colored pattern.



Follow these steps:

1. Using the Magnifier, draw an 8 x 8 pattern (8 pixels wide by 8 pixels long), and cut it into the Cut Buffer with the Copy Box.
2. Paint the area you want to pattern fill with an unused Palette color.
3. Move the Left Delimiter onto the background color and the Right Delimiter onto the color you just filled with. Make sure the Color Selector is NOT under either Delimiter.
4. Select the Copy Box from the Tool Grid and click on Color Swap ([F10]) in the Options Box. This swaps the background and fill colors.
5. Turn on Grid in the Tool Grid.
6. Select Jack Knife from the Tool Grid and Reverse mode from the Options Box.
7. Select PASTE ([F3]) from the Options Box. This pastes your pattern from the Cut Buffer to the Canvas.
8. Drag your pattern into the background area and paint with it by holding down the right mouse button while moving the mouse. The pattern will paint only over the background color.
9. Restore your colors by choosing the Copy Box from the Tool Grid and Color Swap ([F10]) from the Options Box.

Creating Motion

You can create the effect of motion by using NEOchrome's color-ramping and color-cycling abilities. Try it with a ramp line by following these steps:

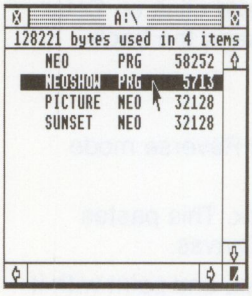
1. Move the Left and Right Delimiters to enclose a color range (the default when NEOchrome loads is good for this).
2. Select Line Draw from the Tool Grid and draw ramp lines with the right mouse button.
3. Begin color cycling by clicking the right mouse button on one of the Scroll Arrows.

As the Palette scrolls between the Delimiters, its colors scroll through the ramp lines, creating the illusion of motion. Sophisticated effects, such as waterfalls and rotating galaxies, can be created using this process with the Paint Brush and Spray Can.

Running the NEOchrome Slideshow

The NEOchrome program disk contains a file called NEOSHOW.PRG. This is the NEOchrome slideshow program, NEOshow, which lets you view your paintings one by one in a continuous slideshow. NEOshow is run from the GEM Desktop as a separate program, although it displays the paintings you created and saved using NEOchrome.

To run NEOshow, exit NEOchrome and return to the GEM Desktop. Obtain a directory listing for the NEOchrome disk, then double-click on the file NEOSHOW.PRG.



The program will load, then cycle through and display all files with the .NEO extender on that disk.

Note: NEOSHOW.PRG must be on the disk or in the folder with the NEOchrome paintings you want to view, although NEO.PRG need not be on the disk. Each .NEO picture is 32128 bytes long. A single-sided disk (357376 bytes) can hold ten .NEO pictures, NEOSHOW.PRG, and NEOSHOW.INP. A double-sided disk (726016 bytes) can hold 22 .NEO pictures, NEOSHOW.PRG, and NEOSHOW.INP. (See **Creating a NEOSHOW.INP File** in this chapter for an explanation of NEOSHOW.INP.)

Setting a Painting's Slideshow Timer

During the slideshow, each painting stays on screen for a certain length of time. You can tell NEOshow how long to display a painting by using the Scroll Arrows in NEOchrome. Follow these steps:

1. Load the NEOchrome program, then load a painting onto the Canvas.
2. Turn on color cycling by clicking the right mouse button on a Scroll Arrow (see **Cycling Colors** in this chapter). The painting's slideshow "timer" begins at this point.
3. When the desired length of time has passed, turn off color cycling by clicking either mouse button on the opposite Scroll Arrow.
4. Turn on color cycling again, and immediately save the painting to disk. Color cycling must be on when you save the painting; otherwise, the picture's display time (just set) will not be saved to disk.

When you run NEOshow, the picture will stay on screen for the length of time set with the Scroll Arrows.

Note: Setting the slideshow timer with the Scroll Arrows also creates color cycling in your painting. If you don't want to cycle colors, move the Left and Right Delimiters to the same color in the Color Palette before setting the timer.

Creating a NEOSHOW.INP File

You can customize your NEOshow slideshow by creating a NEOSHOW.INP (input) file. This file lets you tell NEOshow which pictures to display and in what order, the length of time to display each picture, and what transition effects to use between pictures.

NEOshow input files are written on a text editor or word processor. To write a file, return to the GEM Desktop and load an editing or word-processing program. Then create a file, which you must name NEOSHOW.INP.

In the file, instructions for each picture must be entered on a separate line. Each line has the following form:

[filename[.ext]][,#nnn] [,%n]<CR>

Each parameter enclosed in brackets is optional; it does not need to be included in the instruction line. Parameters can be separated by commas or blank spaces. Lines must end with a carriage return (<CR>), entered by pressing the **[Return]** key.

The first two parameters, filename and .ext, are your picture's filename and extender. A file must have an extender to be read by NEOshow. If a filename is specified without an extender, NEOshow assumes that the extender is .NEO. (You can rename a picture file from the GEM Desktop using a different extender, then specify that filename and extender in the input file.)

The third parameter, #nnn, is the length of time in tenths of seconds that you want the picture to be displayed. For example, to display a picture for 12 seconds, enter #120. You must include the pound sign (#); do not set the number to more than 10000 (1000 seconds). A duration set in the input file overrides a duration set using the Scroll Arrows in NEOchrome.

The fourth parameter, %n, is the transition mode from one painting to the next. For example, entering %5 results in the bottom-up transition, in which the next picture comes on screen from the bottom, scrolling upward. You must include the percent sign (%).

The eight transitions possible in NEOshow are:

0 Straight cut. The transition is directly to the next painting.

1 Fade out/in to white. The current picture fades out to white, and the next picture fades in from white.

2 Fade out/in to black. The current picture fades out to black, and the next picture fades in from black.

3 Fade out/in to background. The transition is from the current picture's background to the next picture's background.

4 Top down. The next picture comes on screen from the top, scrolling downward.

5 Bottom up. The next picture comes on screen from the bottom, scrolling upward.

6 Both top down. The current picture leaves the screen scrolling downward while the next picture comes on screen from the top, scrolling downward as well.

7 Both bottom up. The current picture leaves the screen scrolling upward while the next picture comes on screen from the bottom, scrolling upward as well.

A sample NEOSHOW.INP file might look like this:

PICTURE1.NEO,#20,%3
PICTURE2.NEO,#100,%7
PICTURE3.NEO,#1000,%0

When NEOshow is run with the sample NEOSHOW.INP file on disk, it will first display PICTURE1.NEO for two seconds, then make Transition 3 (fade out/in to background) to PICTURE2.NEO. It will display PICTURE2.NEO for ten seconds, then make Transition 7 (both bottom up) to PICTURE3.NEO. PICTURE3.NEO will be displayed for 100 seconds, then make Transition 0 (straight cut) back to PICTURE1.NEO. Any other .NEO pictures on the disk will not be displayed.

You can write instruction lines that include only one or two parameters. For example:

#100,%7

displays all pictures for 10 seconds using Transition 7.

#50

displays all pictures for 5 seconds using Transitions 1 through 7 in a continuous cycle.

PICTURE1.NEO,%4
#150

displays PICTURE1.NEO, uses Transition 4 to display the next picture found, displays that picture for 15 seconds, then uses the cycle of transitions to redisplay PICTURE1.NEO.

If you do not specify a filename, NEOshow displays the .NEO files in the order it finds them on disk.

If you do not specify a duration, NEOshow displays the file for as long as it takes to read it in from disk and make a transition to the next file. The default duration is dependent on the disk (microfloppy or hard) and the transition used. If you do not specify a duration in the input file, but have set the duration with the Scroll Arrows, NEOshow uses that duration.

If you do not specify a transition, NEOshow cycles through the transitions in order from Transition 1 to Transition 7, then repeats. Transition 0 is not used.

Before saving NEOSHOW.INP to disk, you must delete all formatting codes or instructions except the carriage return at the end of each instruction line. Then, save the file to the same disk containing NEOSHOW.PRG and the .NEO files you want to display.

The first picture in the slideshow always fades in from white. Press the **[Help]** key to display the current picture's filename during the slideshow. (One or two pictures will be displayed before the filename display begins.) Press **[Undo]** to deactivate the filename display.

Press **[Control]** **[S]** to pause the slideshow. Press **[Control]** **[Q]** to resume. Press **[Space Bar]** to exit NEOshow and return to the GEM Desktop.

APPENDIX A
SYSTEM AND EXTENDED SYSTEM CHARACTER SETS

The ST Computer's Character Set offers 255 different characters and symbols. NEOchrome divides this set into the System and Extended System sets. You use these sets when adding text to your pictures.

When you select Text from the Tool Grid, the Options Box lists an option called FACE. By clicking the left mouse button in the box next to FACE, you can toggle between the System and Extended System sets.

System Set

The System set contains the characters printed on the ST Computer keyboard plus some special characters. Select SYSTEM from the Text Options Box, then press the appropriate keys on the keyboard. The keystrokes that return the set's special characters are listed below.

Character	Keystrokes	Character	Keystrokes
	[Control] [A]		[Control] [P]
	[Control] [B]		[Control] [Q]
	[Control] [C]		[Control] [R]
	[Control] [D]		[Control] [S]
	[Control] [E]		[Control] [T]
	[Control] [F]		[Control] [U]
	[Control] [G]		[Control] [V]
	[Control] [I]		[Control] [W]
	[Control] [J]		[Control] [X]
	[Control] [K]		[Control] [Y]
	[Control] [L]		[Control] [Z]
	[Control] [N]		[Control] [\]
	[Control] [O]		[Control] [ ]]

Character	Keystrokes	Character	Keystrokes
✗	[Control] [6]	Δ	[Delete]
✓	[Control] [-]	|	[Shift] [\ ]

Extended System Set

The Extended System set contains international characters and many special characters. Select EXTENDED SYS. in the Options Box, then press the keys that return the characters you want. Keystrokes that return the Extended System characters are listed below.

Character	Keystrokes	Character	Keystrokes
ü	[Control] [A]	û	[Control] [V]
é	[Control] [B]	ù	[Control] [W]
â	[Control] [C]	ÿ	[Control] [X]
ä	[Control] [D]	Ö	[Control] [Y]
à	[Control] [E]	Ü	[Control] [Z]
å	[Control] [F]	¢	[Control] [[ ]
ç	[Control] [G]	£	[Control] [\ ]
ë	[Control] [I]	¥	[Control] [ ]]
è	[Control] [J]	ß	[Control] [6]
ï	[Control] [K]	ƒ	[Control] [-]
î	[Control] [L]	á	[Space Bar]
Ä	[Control] [N]	í	[Shift] [1]
Å	[Control] [O]	ó	[Shift] [']
É	[Control] [P]	ú	[Shift] [3]
æ	[Control] [Q]	ñ	[Shift] [4]
Æ	[Control] [R]	Ñ	[Shift] [5]
ô	[Control] [S]	ª	[Shift] [7]
ö	[Control] [T]	º	[']
ò	[Control] [U]	¿	[Shift] [9]

Character	Keystrokes	Character	Keystrokes
¬	[Shift] [0]	ג	[Shift] [D]
¬	[Shift] [8]	ד	[Shift] [E]
½	[Shift] [=]	ה	[Shift] [F]
¼	[,]	ו	[Shift] [G]
¡	[-]	ז	[Shift] [H]
«	[.]	ח	[Shift] [I]
»	[/]	ט	[Shift] [J]
ã	[0]	י	[Shift] [K]
õ	[1]	כ	[Shift] [L]
Ø	[2]	ל	[Shift] [M]
ø	[3]	מ	[Shift] [N]
Œ	[4]	נ	[Shift] [O]
œ	[5]	ס	[Shift] [P]
À	[6]	ע	[Shift] [Q]
Ã	[7]	פ	[Shift] [R]
Õ	[8]	צ	[Shift] [S]
¨	[9]	ק	[Shift] [T]
´	[Shift] [;]	ר	[Shift] [U]
†	[;]	ש	[Shift] [V]
¶	[Shift] [,]	ת	[Shift] [W]
©	[=]	ן	[Shift] [X]
®	[Shift] [.]	ך	[Shift] [Y]
™	[Shift] [/]	ם	[Shift] [Z]
ij	[Shift] [2]	ף	[[ ]
IJ	[Shift] [A]	ץ	[\ ]
Æ	[Shift] [B]	§	[ ]]
Ç	[Shift] [C]	^	[Shift] [6]

Character	Keystrokes	Character	Keystrokes
∞	[Shift] [-]	≡	[P]
α	[']	±	[Q]
β	[A]	≥	[R]
Γ	[B]	≤	[S]
π	[C]	⌠	[T]
Σ	[D]	⌡	[U]
σ	[E]	÷	[V]
μ	[F]	≈	[W]
τ	[G]	°	[X]
Φ	[H]	∙	[Y]
Θ	[I]	·	[Z]
Ω	[J]	√	[Shift] [[ ]
δ	[K]	n	[Shift] [\ ]
∅	[L]	2	[Shift] [ ]]
ϕ	[M]	3	[Shift] [']
∈	[N]	‾	[Delete]
∩	[O]		

Note: Characters available in System are not available in Extended System and vice versa. You must switch between the two sets to mix characters from both sets.

APPENDIX B
.NEO FILE FORMAT

A NEOchrome picture file consists of a header followed by a screen memory image. The header is 128 bytes long and the memory image is normally 32000 bytes long. The table below illustrates the .NEO file format.

Offset	Variable Name	Length	Explanation
+0	File ID	1 word	NEOchrome expects 0.
+2	Resolution	1 word	0 = low, 1 = med, 2 = high. NEOchrome accepts only 0, but NEOshow can accept 0, 1, and 2.
+4	Palette	16 words	Hardware Color Palette for this picture.
+36	(Unused filename)	12 bytes	Unused by NEOchrome but may be used by other programs as a filename.
+48	CRAMPTR	1 word	Color ramp pointers. Bit 15 set if low 8 bits are valid. If valid, high nibble of low byte is Left Delimiter, low nibble is Right Delimiter (0–15 each).
+50	CSCRLSPD	1 word	Color Scroll Speed. Bit 15 set if valid. If valid, low order byte is signed number of frames per color step, negative is left (information is read by slideshow only).
+52	Duration	1 word	Number of color steps (defined by CSCRLSPD) to display this picture before going to next (information is read by slideshow only).
+54	NEOX	1 word	Reserved. Value = 0. Horizontal offset into Canvas for leftmost display edge for NEOshow.

Offset	Variable Name	Length	Explanation
+56	NEOY	1 word	Reserved. Value = 0. Vertical offset into Canvas for topmost display edge for NEOshow.
+58	NEOWIDTH	1 word	Reserved. Value = 320. Total Canvas width in pixels.
+60	NEOHEIGHT	1 word	Reserved. Value = 200. Total Canvas height in pixels.
+62	Unused	33 words	Reserved by Atari Corporation for future expansion.
+128	Canvas Memory Image	32000 bytes	The size of the memory image is derived from NEOWIDTH, NEOHEIGHT, and Resolution. Future releases may have Canvas sizes larger than one screen.

GLOSSARY

Alignment The Text entry option that lets you enter your text centered, aligned left, or aligned right.

Aspect Ratio The ratio of a pixel's width to its height. The aspect ratio of a low-resolution pixel on the ST Computer is 9:10.

Background Color The color in the far left position on the Color Palette. The default background color is black (RGB 000).

Canvas The area of the NEOchrome screen where you create artwork, using tools from the Tool Grid and colors from the Color Palette. The Canvas can be displayed in either half or full size.

CLEAR A Jack Knife or Copy Box option that lets you delete a defined picture area. The corresponding function key is **[F4]**.

Color Cycling The effect of movement, such as a waterfall flowing, included in a NEOchrome picture. To create color cycling, use the Delimiters in the Color Palette and the Scroll Arrows on either side of the Color Mixer.

Color Map The orderly map showing the 512 colors available on the ST Computer. The Color Map is displayed when the Canvas is in half size and the mouse pointer is positioned below the Canvas.

Color Mixer The NEOchrome component that displays a single color and its RGB (red, green, blue) value.

Color Palette A color bar showing the 16 colors available for painting, from which the color currently in use is selected.

Color Selector The marker under the Color Palette that points to the color currently selected.

Color Substitution Replacing pixels of one color on the Canvas with pixels of another color, using the Copy Box Color Swap option and both Color Palette Delimiters. One of the Delimiters must also be the selected color.

Color Swap A Copy Box option that lets you swap or substitute colors on the Canvas. The corresponding function key is **[F10]**.

Color Swapping Exchanging pixels of two different colors on the Canvas, using the Copy Box Color Swap option and both Delimiters in the Color Palette. The Color Selector must NOT be under either Delimiter.

Constrain Mode A mode that forces an action to follow a straight line, typically horizontal or vertical, and affects the Pencil, Eraser, Paint Brush, Spray Can, Jack Knife, Copy Box, Line Draw, and Shapes. The mode is activated by holding down either **[Shift]** key before using a Tool.

COPY A Jack Knife or Copy Box option that lets you define an area of the picture and leave it on the Canvas while also storing a copy of it in the Cut Buffer. The corresponding function key is **[F2]**.

Copy Box The Artist's Tool that lets you define and manipulate a rectangular portion of your picture. Copy Box includes eight options and four modes.

Cursor A movable symbol on the screen that shows where your next action will take place. The cursor is manipulated with the mouse, and its form changes depending on its position on screen and the Artist's Tool selected.

Cursor Color The color in the far right position on the Color Palette. The default cursor color is white (RGB 777).

CUT A Jack Knife or Copy Box option that lets you remove an area of the picture and store it in the Cut Buffer. The corresponding function key is **[F1]**.

Cut A Miscellany option that creates an ASCII text file named COPYBn.S from the image in the Cut Buffer. The file is used to incorporate color NEOchrome graphics into another application.

Cut Buffer The internal memory area of NEOchrome where a section of a picture is held after being cut or copied with the Jack Knife or Copy Box. The section can then be re-pasted into the original picture or into another picture. Only one section at a time can be held in the Cut Buffer.

Delimiters The left- and right-pointing blocks in the Color Palette that enclose the color range of ramp lines and color cycling. The Delimiters are also the two colors used in color swapping and color substitution.

Disk The Artist's Tool used to save the picture on the Canvas to disk, load a previously created picture, or quit NEOchrome.

Eraser The Artist's Tool used to delete color from your picture. The Eraser does not erase background color.

Extended System Character Set The half of the ST Character Set that includes international characters, accented letters, and symbols.

FACE The Text option that lets you select System or Extended System characters.

Full Screen The NEOchrome feature used to display the full-size Canvas. All Artist's Tools and options except the Grabber are functional in Full Screen.

Grabber The Artist's Tool used to move the Canvas up and down in half size and identify particular colors on the Canvas.

Grid The NEOchrome feature that makes the Tool you're using "jump" to grid points as it is moved on the Canvas.

Grid Points Every eighth pixel on the Canvas. Their coordinates are always evenly divisible by eight.

H-FLIP A Copy Box option that lets you horizontally flip an area of the picture about its central vertical axis. The corresponding function key is [F6].

Hot Spot The outlined pixel in the center of the Magnifier that shows a Tool's position on the Canvas.

Jack Knife The Artist's Tool used to define a freeform picture area in order to move or erase it. Jack Knife includes four options and three modes.

Line Draw The Artist's Tool used to draw a straight line from one pixel to another. Lines can be either solid-color or ramp lines. Line Draw includes eight thickness options.

Magnifier The NEOchrome component that displays an enlarged (5x) view of the Canvas for detailed drawing.

Mask A Miscellany option that creates an ASCII text file named COPYBn.M from the image in the Cut Buffer. The file is used to incorporate monochrome NEOchrome graphics into another application.

Miscellany The Artist's Tool used to display the x/y coordinates of the Tool on the Canvas and save pictures in ASCII code. Miscellany includes a color/palette UNDO option.

Mix To manipulate the RGB (red, green, blue) values of a color in order to modify it. See **RGB Value**.

Opaque Mode A mode available with the Jack Knife or Copy Box that lets you move the defined area over the picture on the Canvas. Anything behind the defined area is covered.

Options Box The box that appears in the lower right of the screen when you select the Paint Brush, Spray Can, Text, Line Draw, Shapes, Miscellany, Jack Knife, or Copy Box. It provides you with different ways to use the selected Tool.

Paint Brush The Artist's Tool used to brush paint on the Canvas in a selected color or multicolored strokes. Paint Brush includes 38 brush options.

Paint Bucket The Artist's Tool used to "pour" paint on the Canvas. The Paint Bucket is also called Area Fill.

PASTE A Jack Knife or Copy Box option that lets you place an image from the Cut Buffer onto the center of the Canvas, or onto a picture area previously defined with the Copy Box. The corresponding function key is [F3].

Pencil The Artist's Tool used to draw lines, point by point, on the Canvas.

Picture Filename The filename of the picture currently on the Canvas, made up of a first name and an extender. The first name can have up to eight characters; the extender must always be .NEO.

PICTURE.NEO The default filename of a NEOchrome picture.

Pixel Picture element. An individual screen dot; the smallest point of resolution on a display monitor.

Ramp Lines Multicolored lines composed of equal segments of each color in the range enclosed by the Color Palette Delimiters. The colors "ramp" from the color of the Left Delimiter to the color of the Right Delimiter.

Reverse Mode A mode available with the Jack Knife that lets you move the defined area "behind" other images on the Canvas. Defined areas moved in this mode are visible only when placed on background color.

Reverse Video A monitor display feature that produces the opposite combination of image and background colors from the usual combination. For instance, reverse video is black images on a white background, if white images on a black background is usual.

RGB Value A number made up of three digits representing the red, green, and blue values, respectively, of the color shown in the Color Mixer. Each value can range from 0 to 7.

ROTATE A Copy Box option that lets you rotate a picture area 90 degrees counterclockwise. The corresponding function key is **[F5]**.

Scale A Copy Box option that lets you stretch or shrink a picture area. The corresponding function key is **[F9]**.

Scroll Arrows The NEOchrome components used to scroll the Color Palette and create and control color cycling.

Shapes The Artist's Tool used to draw five shapes: rectangles, rounded rectangles, ellipses, freeform shapes, and polygons. Shapes can be drawn filled (bordered or borderless), or unfilled. The Shapes Tool includes eight border-width options.

Spray Can The Artist's Tool used to spray paint on the Canvas in a selected color or multicolored strokes. Spray Can includes 38 nozzle options.

Stamp To copy a picture area defined by the Jack Knife or Copy Box to another place on the Canvas by clicking the right mouse button. Also, to place a single Paint Brush or Spray Can dab on the Canvas.

System Character Set The half of the ST Character Set that includes standard alphanumeric characters and symbols, typically printed on the keyboard.

T-EDGE A Copy Box option that lets you trace the border of an image drawn in the currently selected Palette color, and then replace the color within the border with the background color. The corresponding function key is [F8].

Text The Artist's Tool used to insert letters, numbers, and symbols in a picture. Text options include five styles, six sizes, three alignment options, and two character sets.

Text Size The height in pixels of the largest character in the text you will type onto your picture. The Text Options Box contains six Text Size options.

Text Style The look or form of the text you will type onto your picture. The Text Options Box lists five Text Style options.

Transparent Mode A mode available with the Jack Knife or Copy Box that makes any background color within the defined area transparent. When you move the defined area on the Canvas, any other painting behind it shows through the "holes."

Undo To eliminate the result of your most recent action. Also, a Miscellany option that restores colors in the Palette (and on the Canvas) to their previous values.

Undo Box The NEOchrome component used to restore the Canvas to the way it appeared before the last graphics operation.

V-FLIP A Copy Box option that lets you vertically flip an area of the picture on its central horizontal axis. The corresponding function key is [F7].

X/Y Coordinates Numbers identifying a Tool's pixel position on the Canvas. Coordinates are numbered from the upper-left pixel of the Canvas, position 0,0. The x coordinate is the Tool's horizontal position, ranging from 0 to 319; the y coordinate is the Tool's vertical position, ranging from 0 to 199. The x/y coordinates display is toggled on and off from the Miscellany Options Box.

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